

# CHANGE MANAGEMENT FOR DIGITAL INNOVATION: TOWARDS AN ECOSYSTEM PERSPECTIVE

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## ABSTRACT

*The transition from the concept of “own economy” to the concept of “shared economy”, as a result of the pervasive use of digital technologies, has led organisations to start dealing with change management in a collaborative way. This change of perspective reflects the shift from a network approach towards an ecosystem approach, the latter allowing the investigation of a new form of change management. One of the main limitations of change management models drawn from literature is indeed the fact that they focus only on the perspective of a single organisation. The aim of this research paper is therefore to define a new and generalized change management framework able to specifically manage innovation within a complex digital ecosystem of actors. The new framework will be defined as a series of activation phases aimed at properly guiding the implementation of changes within a digital ecosystem. Most common limitations identified for each phase will be also provided, together with the corresponding change management actions and related monitoring indicators. The framework will highlight both short- and long-term change management actions where all the actors belonging to the digital ecosystem can face innovation through their interaction, communication, joint contexts and shared purposes and interests. Finally, the validity of this new change management framework will be proved thanks to its application in a project of digital innovation in healthcare, providing concrete examples on how change management actions can be carried out throughout a specific digital ecosystem.*

**Keywords:** Change Management, Digital Innovation, Ecosystem, Healthcare Logistics

## 1. THEORETICAL AND EMPIRICAL BACKGROUND AND RELEVANCE

Change management is a necessary ingredient of any continuous innovation efforts (Raza et al., 2017; Rosenbaum et al., 2018). Change management provides tools and methodologies that can be used to organize, harmonize, monitor and approve all the tasks needed to implement change (Cameron and Green, 2012). Literature has already provided different solid change management frameworks, like the Lewin (1951) or Kotter (1996) models, which allow to manage change processes within organisations.

Nevertheless, the current era of digital transformation has enabled the transition from the concept of "own economy", developed mainly within an intra-company context, to the concept of "shared economy", leveraging the inter-company context (Lianto et al., 2018). This brought organisations to start managing processes, such as change management ones, in a collaborative way, enabling a collective perspective of "innovation ecosystem" (Autio and Llewellyn, 2014; Razavi et al., 2009). This change of perspective reflects the

greater connection, interdependence and coevolution between different actors and institutions, mainly allowed by the pervasive use of digital technologies. Because of this, we are witnessing a notable shift in the conceptual focus of management from a network approach towards an ecosystem approach, where the focal set of actors is examined as a part of a broad and interdependent systems environment. It is consequently possible to define a digital ecosystem as a co-evolutionary economic system of actors, institutions and technologies, the latter referring to the various types of platforms and technological frameworks that are shared by all the ecosystem realities (Aarikka-Stenroos and Ritala, 2017). An ecosystem approach allows therefore the investigation of a new form of change management, which focuses mainly on the achievement of shared goals and values between different stakeholders of the digital ecosystem (Moore, 2013).

## **2. RESEARCH OBJECTIVES**

Change management models have shown to suffer from two main limits. First, they are derived from a wide range of elements characterizing change, thus resulting in an emphasis of each model on different aspects (Rosenbaum et al., 2018; Malhotra and Hinings, 2015; Chia, 2014). Second, change management models describe change and innovation management mainly within a single organisation, without providing any focus on the perspective of a whole ecosystem (Cameron and Green, 2012; Lianto et al., 2018). Great difficulties in handling an improvement could occur when considering the context of sharing economy, where several organisations collaboratively work on innovation, especially in relation to the different interactions between all the actors involved (Razavi et al., 2009). In fact, to manage and control changes in a digital ecosystem, crucial attention must be paid to some factors like: the responsiveness to requests for change by all the involved realities, the complexity and scalability of IT shared solutions, the knowledge sharing and the open and constant collaboration between each different organisation and institution (Briscoe et al., 2011; Autio and Llewellyn, 2014).

For the above-mentioned reasons, the aim of this research is to define a new and generalized change management framework able to specifically manage innovation within a complex digital ecosystem of actors. In particular, leveraging on the concept that innovation ecosystems are portrayed by innovation-driven goals (Dattée et al., 2018), this new framework has to be characterized by a co-evolutionary logic, highlighting the ecosystem-based features of constant dynamism and evolution, as well as the inherent interdependence of all the actors involved (Aarikka-Stenroos and Ritala, 2017).

## **3. RESEARCH DESIGN**

The new change management framework was defined as a series of sequential activation phases, developed with a logical flow aimed at properly guiding the implementation of changes within a digital ecosystem.

To identify the main activation phases, the first step consisted in the comparison between Kotter (1996) model's phases and Lewis' ones (1951), since both models provide organizations with the necessary methodologies that are necessary to create and manage a conducive environment to implement change. Thanks to the analogies between the two models, and according to the more detailed phases presented by Kotter, eight activation phases were firstly determined. With the aim of having a framework as generalisable as possible, the next step involved the further integration of the Technology Acceptance model (TAM) developed by Venkatesh & Davis (2000). As the TAM reflects the user's viewpoint in accepting and using a digital system, its contribution has been included after the "Develop a vision" phase, considering fundamental to increase the degree of

awareness of the ecosystem actors towards the new technology before entering the “Enlist a group of volunteers” phase. In particular, the TAM has been added as a single activation phase called “Promote acceptance of new technology”, while the model components were inserted as its sub-phases.

The new framework wanted to express also the pivotal role of the involvement of management figures, a concept that is not made explicit in the three abovementioned literature models and it is instead an activity of primary importance in order to effectively start to implement a change management plan. For this reason, a further activation phase called "Top management commitment" was added as the first phase of the framework, underlining the importance that continuous presence and support of the management figures have in carrying out the project and in achieving the set goals.

Once the basic structure of the framework with the related activation phases were determined, we focused on defining the contents relating to each phase. Differently from the majority of models in the literature, which assume an analysis perspective based only on the internal needs of the single organization, our framework leveraged the information derived from the abovementioned models in order to focus innovatively on how to manage change at an ecosystem level. First of all, main limitations identified during the implementation of innovation within an ecosystem were highlighted for each activation phase. In an ecosystem, limitations can be generally traced back to the high number of actors and stakeholders directly or indirectly involved in the development of a project and to the difficulty of having a clear communication between them in sharing interests, strategies and knowledge. Main change management actions to be adopted by the ecosystem actors were then described, with the aim of overcoming the limitations identified for each activation phase. Finally, common indicators for monitoring of change management activities were also defined for each phase.

To prove its validity and reliability, this new change management framework has been applied in the project of digital innovation in healthcare “LIFEMED – Integrated Logistics of Medicines and Medical Devices” (Locatelli et al., 2019) funded by the Italian Ministry of Education, Universities and Research (Ministero dell’Istruzione, dell’Università e della Ricerca). The application of the framework in the mentioned project has already been set up and its effects are being monitored. Although the complete set of results, due to the project timing, will be available only upon completion of the project (i.e. end of September 2020), the implementation has already provided different examples on how the change management actions described in the new framework can be carried out throughout a specific digital ecosystem.

#### **4. RESULTS**

The new change management framework thus obtained is synthesized in Table 1, highlighting the ten defined activation phases. Examples of the most common limitations identified for each phase are also provided in the schematization, together with the corresponding change management actions and related indicators that are necessary to guarantee the correct execution of the model and the consequent achievement of the objectives. Moreover, some of the examples provided by the application of the framework in the LIFEMED project are summarized in Table 1, in reference to the corresponding change management actions and related activation phases.

**Table 1. Change management framework depicting its activation phases, examples of identified limitations, the corresponding change management actions (with LIFEMED applications, when present) and the related monitoring indicators**

	Identified limitations	Change management actions	Indicators for monitoring change management actions
<u>Top management commitment</u>	Poor perception, by the top management figures belonging to the ecosystem, of the common benefit derived by the implementation of the proposed change	Identify one or more top management figures who can support the proposed change within their organizational contexts. I.e. in LIFEMED Strategic Directos of healthcare facilities were involved	Monitor the involvement level of top management
<u>Create sense of urgency</u>	Resistance and lack of perception of the need for change by the actors belonging to the ecosystem	Involve from the beginning of the project the main stakeholders belonging to the ecosystem and show them the benefits obtainable from the adoption of the change. I.e. in LIFEMED were organized specific moments of confrontation to identify the various ecosystem actors who could participate in the project and promote occasions to collect feedback	Monitor the number of feedbacks and contributions provided by the ecosystem stakeholders
<u>Form a strong coalition</u>	Wrong selection and/or lack of involvement of the different actors that make up the reference ecosystem	Encourage continuous and constant communication between all ecosystem actors. I.e. in LIFEMED technological solution providers were encouraged to constantly communicate with other actors of the reference ecosystem such as stakeholder of healthcare facilities	Monitor the level of involvement and harmony of the leading coalition
<u>Develop a vision</u>	Failure to identify the common changes and the change management strategy needed by all actors belonging to the ecosystem	Organize preliminary meetings between the main ecosystem stakeholders aimed at sharing, identifying and validating the strategic plan to be adopted and the common changes needed	Assessment of the degree of diffusion of the change, identifying the most involved organizational areas belonging to the ecosystem

<i>Promote acceptance of new technology</i>	<i>Act on the perceived usefulness</i>	Perception that the technology is not able to manage or can hinder interactions between the different ecosystem actors	Identify one or more reference actors able of reassuring the other ecosystem players regarding the functionality of the adopted technology. I.e. in LIFEMED, information material about the technology solution can be shared, with the aim of transmitting the message of practical utility to the ecosystem actors	Collecting feedbacks by ecosystem actors on the perceived usefulness of the technology in relation to their specific activity
	<i>Act on the perceived ease of use</i>	Perception that one or more actors are not performing in the efficient use of the new technology, appearing as a restraint on the entire ecosystem	Establish periodic test sessions between different actors and training days regarding the shared use of technology	Collecting feedbacks about learning in the use of the new technology
	<i>Act on the subjective involvement</i>	Risk that some actors of the ecosystem feel less involved than others in the change process	Avoid polarization or centralization of decision-making power, so as to promote a vision of collective growth and to encourage the involvement of all the actors	Monitor the level of ecosystem actors' subjective involvement
	<i>Leverage individual characteristics</i>	Perception of inadequacy or technological backwardness of one ecosystem actor compared to the others	Promote coaching by the most technologically advanced actors during initial phases, in order to provide all the other ecosystem actors with the means necessary to accept and use the new technology. I.e. in LIFEMED were planned specific training sessions on LIFEMED technology for the ecosystem actors, to guarantee the same technical skills	Monitor individual perception towards the new technological solution
	<i>Enlist a group of volunteers</i>	Fears and uncertainties felt by some ecosystem actors regarding how change will affect their reality	Promote a common message with the aim of transmitting the same vision and the same change strategies to all the ecosystem actors	Monitor the size and skills of the group of volunteers and the effectiveness of the adopted communication channels

<u>Remove obstacles to change</u>	Conflicts of interests, adversity to change and bureaucratic rigidities in the interaction between the main ecosystem stakeholders	Organize meetings between the various ecosystem stakeholders to share the benefits deriving from the change, without neglecting the interests of the different realities, promoting a perspective of knowledge mobility. I.e. in LIFEMED were organized, also through digital channels (e.g. email exchange, video call, etc.) moments of sharing and exchange of knowledge between the various players in the ecosystem	Estimate the level of contribution and participation of the ecosystem actors involved in the change
<u>Show short-term results</u>	Risk of isolation or frictions between the different ecosystem actors once the initial enthusiasm is exhausted	Organize meetings between the main ecosystem stakeholders aimed at sharing the short-term results achieved and collecting feedback on the vision and common strategies defined	Measure the actual achievement of the expected short-term results and investigate potential gaps
<u>Accelerate change</u>	Different timelines and inhomogeneities in the implementation of the change between the different ecosystem actors	Periodically check that change activities are carried out by all ecosystem actors, organizing meetings aimed at enhancing the obtained results and discussing any critical issues or problems that emerge. I.e. in LIFEMED was defined a clear timing for the various activities of the project and it was periodically shared with the Strategic Directions of healthcare facilities and the other leading figures involved	Monitor the level of involvement of the ecosystem actors and the effectiveness of the dissemination activities
<u>Firmly anchor new practices to corporate culture</u>	Possibility that, in the long term, individualist behaviours of single actors may affect the interoperability of the ecosystem	Identify different actors, who have proven to have the skills related to the change process as points of reference for all the other ecosystem players and celebrate in each other actor the role played in achieving change	Measure the overall impact of change on the ecosystem: e.g. a dashboard of indicators that compare the effectiveness, quality and safety of AS IS processes with those of TO BE

## 5. DISCUSSION AND CONCLUSION

Thanks to the described approach, a new framework has been created that can be applied to a digital ecosystem approaching a change management process. In particular, compared to models referred to individual organisations, this generalized framework focuses on both short- and long-term change management actions thanks to which all the actors belonging to the digital ecosystem can face innovation through their interaction, communication, joint contexts and shared purposes and interests. Furthermore, according to the strategic key principles of approaching an ecosystem (Adner, 2016), actors' continuous involvement and steady alignment will be highlighted as crucial actions in order to ensure that innovation is carried out jointly throughout the whole digital ecosystem. In order to have a first practical application of the framework, it was decided to use the model into a project in the field of logistics in healthcare, which is actually ongoing: in particular, the project experimentation phase and the effective use of the framework is actually underway and will continue for the next months. This first practical application of the framework will give elements for the refinement and validation of the theorized model. Moreover, it will be important to apply the described model in other fields: this further research will be necessary to test the framework feasibility and replicability in other contexts.

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