Sectoral System of Social Innovation: Towards an Agenda for Future Empirical Inquiries

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Abstract

This research focuses on generating an in-depth understanding of the social innovation process from the perspective of sectoral system of innovation (SSI). It presents a detailed and updated review of studies on social innovation and sectoral system of innovation, regardless of any specific geographical area, in order to augment the generazibility of the research topic. Further, it addresses knowledge gaps derived from a systematic literature review and exhibits novelty by linking social innovation process with the sectoral system of innovation. The review has resulted in a conceptual framework of sectoral system of social innovation that can form the basis for ensuing empirical inquiries.

Keywords: *Social innovation, social innovation process, system of innovation, sectoral system of social innovation*

1. Introduction

The field of social innovation (SI) has received enormous attention in scholarly, policy and public debates (Van Wijk, Zietsma, Dorado, de Bakker & Martí, 2019; Marques, Morgan & Richardson, 2018; El-Haddadeh, Irani, Millard & Schröder, 2014). Social innovation is described as innovation that meets social needs and creates new social relationships (Murray, Caulier-Grice & Mulgan, 2010). There is a growing consensus among practitioners, policy makers, the research community, and others that widespread social innovation is required to cope with the significant challenges that societies face (Bekkers, Tummers, Stuijfzand & Voorberg, 2013). However, social innovation is weakly conceptualized (Mulgan, 2012), and the state of knowledge continues to be fragmented (Cajaiba-Santana, 2014; Dawson & Daniel, 2010; Pol & Ville, 2009). Moreover, social innovation projects are poorly understood in practice. Therefore, the gap needs to be filled through theoretical contribution. This requires

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developing a conceptual framework of new theory to better understand social innovation in order to advance its practice (Rana, Weerakkody, Dwivedi & Piercy, 2014). Recognizing social innovation as a systemic and non-sequential process which is influenced by variety of factors, the need for a conceptual framework derived from sectoral system of innovation approach, guides this research. As sectoral approach acknowledges systemic and non-sequential nature of innovation process, and comprises of all important factors that influence and explain the process (Edquist, 2006; Malerba, 2002; Malerba & Adams, 2013). This shows novelty as the influential factors examined independently in literature on social innovation have been integrated collectively into one consistent approach and accordingly developed through the conceptual framework of sectoral system of social innovation.

Moreover, the knowledge gaps identified in a systematic literature review are addressed in this study, of which major ones include:

- Lack of academic research on social innovation, its characteristics, as well as its systemic and non-sequential social innovation process.

- Lack of strong theoretical foundation and conceptual/theoretical framework for explaining social innovation.

This study aims at developing a comprehensive understanding of social innovation process in terms of its stages within the framework of sectoral innovation system.

2. Review of Literature

2.1. Methodology for the literature review

This section discusses how a number of factors have been considered in order to make the literature review more logical, systematic, transparent and understandable, without missing any appropriate readings. The steps followed for conducting a systematic literature review are as follows:

1. First, the list of keywords (such as social innovation process, sectoral innovation system, and social innovation system) that directly relate with the topic was decided in order to search in online databases (such as ISI Web of Knowledge, Springer Link, Google Scholar and others) and relevant journals to identify publications. The emphasis has been on latest works published from 2002 and onwards for more recent view on social innovation.

2. Secondly, key journals that included the articles relevant to our keywords were identified by searching online databases such as Research Policy, Technological

Forecasting and Social Change, Information Systems Management, and others. The issues of these journals in accordance with timeframe decided were skimmed through to identify relevant articles.

3. Citation information, abstract and keywords of all relevant articles, and accessible research papers were downloaded to EndNote bibliography software, and the downloaded research papers were categorized in different folders to keep the review focused and systematic.

4. Based on an analysis of the titles, keywords, abstracts and conclusions of the articles, the sample was refined to publications explicitly related to inclusion criteria, which were set based on structure of literature review. The inclusion criteria include research work that discusses or investigates either social innovation and related concepts, social innovation process, determinants, frameworks and theoretical perspectives to social innovation, link of social innovation with innovation studies, systems of innovation specifically sectoral system of innovation, and social innovation in terms of building blocks of sectoral system of innovation. The focus while searching the relevant articles from these journals was to find out work that conceptually or/and empirically links social innovation and sectoral systems of innovation. Articles that clearly did not relate with even one of inclusion criteria at least in a broad sense and were in other than English language were discarded, significantly reducing the sample. The remaining articles were read in entirety and research notes pertaining to each were made.

5. In order to ensure completeness and minimise the chances of not considering relevant studies, the backward-chaining process (examining references of the resulting articles) and forward-chaining process (examining citations of the resulting articles) were applied, contributing to additional papers to the pool of analysis.

•   Other than these journal articles, direct searches were carried out to include other types of literature (published or unpublished) such as relevant research reports, practitioner papers, books/chapters, conference papers and dissertations.

•   Articles that were not accessible because of different reasons were accessed by corresponding directly to their authors.

2.2. The emergence of social innovation concept in innovation studies

The concept of innovation has gained attention and desirability since more than a century (Krlev, Bund & Mildenberger, 2014). It is generally described as 'new ideas that work' (Mulgan, Tucker, Ali & Sanders, 2007), and more specifically as "the process of making changes, large and small, radical and incremental, to products,

processes, and services that results in something new for the organization that adds value to customers" (O'Sullivan & Dooley, 2008, p. 5). The innovation studies and the innovation theories have a long history, and find their systematic beginnings and reference in the work of Schumpeter, which is valid to this day (Van der Have & Rubalcaba, 2016). The focus and concern of multidisciplinary, scientific field of innovation studies has been changing in different time-periods. Recently, the field of innovation studies has started giving increased attention to social innovation (Martin, 2013). The increased attention is due to fundamental changes in the twenty-first century that have led to complex and serious social problems. These societal problems/challenges not addressed by existing market offerings or traditional tools of government policy, can rather be solved through social innovations (Ayob, Teasdale & Fagan, 2016; Benneworth, Amanatidou, Edwards-Schachter & Gulbrandsen, 2015). Social innovations meet the diverse and growing needs of society, develop and maintain viable societies, and increase their self-regulating and problem solving capacity to tackle societal challenges (Mulgan, 2006; Weerakoon, McMurray, Rametse & Douglas, 2016). The research scholars, policy makers, and practitioners have consensus regarding social innovation's importance, and accordingly it has become a prominent concept (Moulaert, Martinelli, Swyngedouw & Gonzalez, 2005). Thus, the discussion on social innovation is important as well as timely in innovation studies (Krlev et al., 2014).

Social innovation has been an underdeveloped area in innovation studies, where technological innovation has remained the focus (Choi & Majumdar, 2015; Cunha, Benneworth & Oliveira, 2015; Marques et al., 2018). However, the field of innovation studies possesses more diversified knowledge whereby different streams and research areas have emerged over time (Fagerberg & Verspagen, 2009). The integration of social innovation research in innovation studies will add and enrich the body of knowledge and develop more holistic approaches within innovation studies. Secondly, it will use the insights from innovation studies for understanding and studying social innovations (Edwards-Schachter & Wallace, 2017; Howaldt, Butzin, Domanski & Kaletka, 2014). Therefore, scholars can focus their work to social innovation and use conceptualizations and perspectives on social innovation (discussed in next section) to enable its integration in innovation studies field (Van der Have & Rubalcaba, 2016).

2.3. Conceptualizations and perspectives on social innovation

Social innovation has acquired an autonomous (conceptual) status since early twenty first century, where the concept is formally reviewed since year 2000 usually in the form of grey literature such as working papers and reports. The ongoing academic debates on social innovation are concerned with the questions of how to

conceptualize, define and characterize it. The interest of diverse research fields in social innovation has led to a large number of definitions, which tend to emphasize different conceptualization and characteristics (Edwards-Schachter & Wallace, 2017).

Ayob et al. (2016) explained the evolution of conceptualization of social innovation over twenty-five years period, and Edwards-Schachter and Wallace (2017) explained its evolution over sixty years period. According to these authors, social innovation has evolved as a hybrid concept involving core elements of social relations and societal impact since twenty first century, whereas there has been convergence in literature around this dominant conceptualization. Such convergence among scholarly work can facilitate social innovation research (Weerakoon et al., 2016). This conceptualization represents a more settled conceptualization of social innovation combing core elements, and used by most influential publications. Therefore, this study adopts this dominant conceptualization of social innovation.

Moreover, different conceptualizations of social innovation are used in different perspectives and definitions of social innovation. The overview of different perspectives on social innovation is provided by various researchers (see Table 1).

Table 1: Different Perspectives on Social Innovation by Different Researchers

Authors	Perspectives
Choi and Majumdar (2015)	Sociological, Creativity Research, Entrepreneurship, Welfare Economics, Practice-Led, Community Psychology, and Territorial Development Perspective
Van der Have and Rubalcaba (2016)	Sociological, Creativity Research, Social & Societal Challenge (Practice-Led and Social Entrepreneurship Perspective), Welfare Economics, Community Psychology, and Local/Territorial Development Perspective
Edwards-Schachter and Wallace (2017)	Sociology, Creativity Research, Entrepreneurship, Practitioner Narratives, Community Psychology and Territorial Development Perspective

Among these researchers, Choi and Majumdar (2015) provide a comprehensive set of perspectives, identified by other researchers as well.

These perspectives put different emphases on specific aspects of social innovation (shown in the Table 2). Despite the different focuses, these perspectives are not necessarily mutually exclusive. There is an overlap between them with respect to two core elements of social relations and societal impact (Choi & Majumdar, 2015).

Among different perspectives, the practice-led perspective is more appropriate for this research as it shows strengths over other perspectives (see Table 3).

Table 3 explains that practice led perspective provides most comprehensive under-

Table 2: Different Perspectives and respective Proponents, and Definitions of Social Innovation, Adapted from Choi and Majumdar (2015)

Perspectives	Emphasis	Authors	Definitions
Sociological	Social changes (good or bad), social evolution, & changes in social practices, structure & social interactions, and implicitly human welfare	Cajaiba-Santana (2014), and Howaldt and Schwarz (2010)	"Social innovation as new combination and/ or new configuration of social practices ...with the goal of better satisfying or answering needs and problems than is possible on the basis of established practices" (Howaldt & Schwarz, 2010, p. 21)
Creativity Research	Changes in social interactions, and strategies & tactics used to generate & implement social innovations	Jiang and Thagard (2014), and Mumford (2002)	"Social innovation as the generation and implementation of new ideas about how people should organize interpersonal activities or social interactions to meet one or more common goals" (Mumford, 2002, p. 253)
Entrepreneurship	Social change (good) & evolution, role of social entrepreneurs, & explicitly well-being	Cunha et al. (2015), and Ziegler (2010)	"Social innovation is the carrying out of new combinations of capabilities" (Ziegler, 2010, p. 265)
Welfare Economics	Pure social innovation have character of public good, and improve quality or quantity of life of group of people, such as better education & health and so on.	Dawson and Daniel (2010), and Pol and Ville (2009)	"Desirable social innovation is an innovation that creates new idea that has the potential to improve either the quality or the quantity of life" (Pol & Ville, 2009, p. 881)
Practice-led	Social value/public good, meeting social need/solving social problem, new social relations/ collaborations, & practical application of social innovations by providing roadmaps/ models to design, develop & grow social innovations process	Caulier-Grice, Davies, Patrick, and Norman (2012), Mulgan et al. (2007), Murray et al. (2010), and Phills, Deiglmeier, and Miller (2008)	"Social innovations as new ideas...meet social needs and create new social relationships ... are good for society and enhance societies capacity to act" (Murray et al., 2010, p. 3)

Community Psychology	Experimental social innovation & dissemination model leads to positive social change, improves community's quality of life & solve social problems	Fairweather (1967)	"...to create a new social subsystem whose methods include innovating models as alternative solutions to social problems, experimentally evaluating them, and disseminating the information to those who can make the appropriate changes. This is experimental social innovation" (Fairweather, 1967, p. 6)
Territorial Development	Innovative initiative for local development of neighborhoods & communities, & includes changes in social relations	Moulaert et al. (2005)	"...refers to those changes in agendas, agency and institutions that lead to a better inclusion of excluded groups and individuals... changes in the dynamics of social relations...explicitly refers to an ethical position of social justice..." (Moulaert et al., 2005, p. 1978)

standing of social innovation combing its core elements, and shares central questions with innovation studies. Therefore, this study adopts the practice-led perspective to enable the integration of social innovation in field of innovation studies.

As it is already discussed that practice-led perspective and innovation studies emphasize on: 1) innovation/social innovation itself that is, what is innovation/social innovation and 2) innovation/social innovation process that is, how innovation/social innovation occurs. Therefore, we need to describe the characteristics of social innovation see section 2.5 below, and we need to consider the process of social innovation see section 2.6., to enable their integration.

2.4. Studying social innovation: characteristics of social innovation

The chosen perspective determines the characteristics of social innovation which facilitate its study. The researchers belonging to practice-led perspective, such as Caulier-Grice et al. (2012) provided a complete set of social innovation characteristics, identified and confirmed by other researchers as well (see Table 4). Among these

Table 3: Strengths and Appropriateness of Practice-led Perspective of Social Innovation for this Research

Strengths of Practice led perspective of Social Innovation	Appropriateness for this Research
This perspective provides most of the understandings of social innovation and insights central to social innovation (Caulier-Grice et al., 2012; Edwards-Schachter & Wallace, 2017; Mulgan, 2012).	Understanding and insights on social innovation are the primary focus
It is a valuable perspective for future research as it uses dominant & settled conceptualization of social innovation (Ayob et al., 2016; Edwards-Schachter & Wallace, 2017; Van der Have & Rubalcaba, 2016). Its proponents such as Murray et al. (2010) provides an overarching definition on social innovation that include both core elements of the social relations and societal impact (Ayob et al., 2016), and overcome the ambiguity caused by diversity of definitions. Moreover, this perspective is extensively connected and has commonalities with other research discourses on social innovation (Van der Have & Rubalcaba, 2016).	Such a valuable perspective that provides all-encompassing understanding and convergence facilitates research on social innovation. Therefore, it is required in this research
This perspective emphasizes on social innovation itself (Choi & Majumdar, 2015), which is important since it is social innovation that creates the social value (Pol & Ville, 2009). Secondly, only this perspective emphasizes on the practical application of social innovation and suggests practical ways of designing, developing and growing social innovation, which represents stages of social innovation process (Choi & Majumdar, 2015). Thus, it shares central questions with innovation studies that also focus on the importance of innovation itself, and how innovation occurs that is, innovation process (Benneworth et al., 2015; Fagerberg & Verspagen, 2009; Howaldt et al., 2014).	This research requires this fruitful perspective that enables the integration and can help develop the mainstream of innovation studies into social innovation issues, can provide evidence & testing, and relevant issues for policy makers (Van der Have & Rubalcaba, 2016). Moreover, this integration will be beneficial for innovation studies and social innovations (Howaldt et al., 2014).

characteristics, social need/public value (that is societal impact) and social relations represent the core elements in social innovation conceptualization whereas novelty, improvement and actual implementation represent the criteria to be recognized as innovation (Phills et al., 2008).

Moreover, the other aspect of how social innovation occurs has been discussed in the next section.

Table 4: Characteristics of Social Innovation, their Sources and Descriptions

| Characteristics of SI	Source	Description
1) Meets a Social Need/ Public Value	Ayob et al. (2016), Bekkers et al. (2013), Bund, Hubrich, Schmitz, Mildenberger, and Krlev (2013), Caulier-Grice et al. (2012), Edwards-Schachter and Wallace (2017), Krlev et al. (2014), and Van der Have and Rubalcaba (2016)	Meeting social need/solving social problem focuses on public good that primarily benefits the public & society as a whole
2) Changes in Social Relationships		New social relationships among different stakeholders
2) Novelty	Bund et al. (2013), Caulier-Grice et al. (2012), Krlev et al. (2014), and Phills et al. (2008)	Newness to the field, context, market, region, sector, user or application and can include reinvention or adaptation
3) Improvement		Solution is more beneficial, effective, or efficient than other alternatives
4) Actual Implementation	Bekkers et al. (2013), Bund et al. (2013), Caulier-Grice et al. (2012), Krlev et al. (2014), and Mulgan et al. (2007)	The idea is actually carried/ solution is delivered

2.5. Studying social innovation: the need to consider social innovation process

The process of social innovation explains how it occurs and needs to be studied to suggest the practical ways of carrying out social innovation to create value for the society (Choi & Majumdar, 2015; Lettice & Parekh, 2010). The stages of social innovation process serve as a useful analytical framework that provides a significant tool for policy makers, practitioners and innovators for considering various activities that occur and the needed resources and support in all stages of the process (Murray et al., 2010). This is in line with innovation studies literature that considers innovation process as analytical model, consisting of core set of stages/activities (Meissner & Kotsemir, 2016).

The proponents of practice-led perspective such as Mulgan (2006) along with others (Mulgan et al., 2007) propose social innovation process, consisting of several stages (see Table 5 and figure 1). However, Murray et al. (2010) provide more comprehensive stages process (Caulier-Grice et al., 2012), identified from literature and practice, and through a review of the methods used for social innovations worldwide. Their model has been used by other researchers such as Bund et al. (2013), Caulier-Grice et al. (2012), Howaldt et al. (2014), Krlev et al. (2014), Massey and Johnston-Miller (2016), and others, to understand social innovation.

Table 5: Stages of Social Innovation Process and their Sources

Stages of Social Innovation Process	Source
SI process consists of four stages:	Mulgan (2006), and Mulgan et al. (2007)
1) Idea Generation	
2) Idea Implementation	
3) Scaling Up and Diffusion	
4) Learning and Evolving	
SI process consists of six stages:	Murray et al. (2010)
1) Prompts, Inspiration and Diagnosis: problem identification	
2) Proposal of Ideas: idea generation	
3) Prototyping and Pilot Testing: idea implementation	
4) Sustaining: idea becomes everyday practice	
5) Scaling and Diffusion: growth & adaptation of SI	
6) Systemic Change: changes in thinking, perceptions and way things are done	
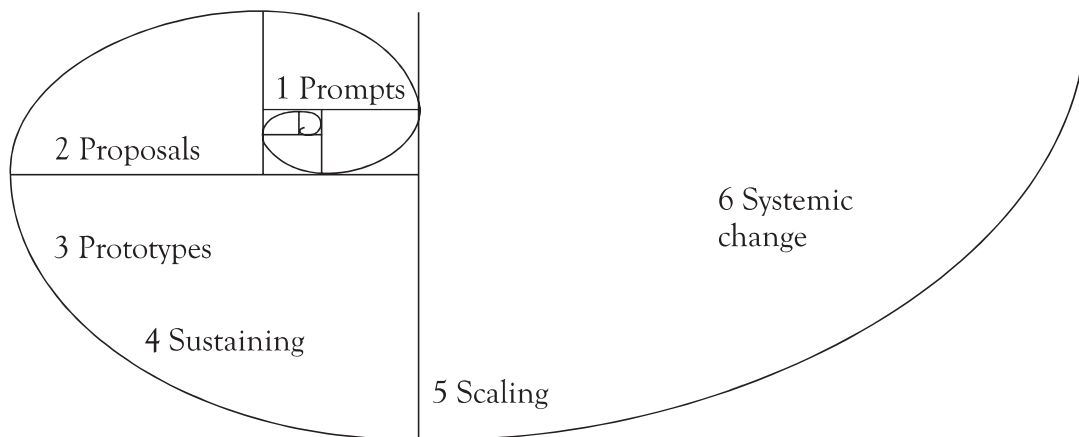
Figure 1: Process of Social Innovation Adopted from Murray et al. (2010)

Thus, we need to understand social innovation as a process that is, how social innovations are designed, developed, diffused and so on (Choi & Majumdar, 2015). Moreover, Cajaiba-Santana (2014, p.42) asserts that, "The boundaries of social innovation processes have not yet been completely defined, leaving considerable space for contributions to both theory and practice."

Accordingly, this study considers the social innovation process proposed by Murray et al. (2010) for studying social innovation. However, the practice-led perspective of

social innovation does not explain it within a theoretical context nor does it build theories on the topic (Choi & Majumdar, 2015). The social innovation process framework it proposes is useful but it is theoretically weak (Howaldt et al., 2014). Therefore, a theoretical perspecitve and a conceptual framework that includes the specificities of social innovation is needed in order to model and explain the process of social innovation, the way it emerges and spreads (Cajaiba-Santana, 2014).

2.6. Studying social innovation process: the need for theoretical foundations of social innovation

A theoretical perspective will assist to examine and demonstrate the significance/ role of social innovation, its impact and possible dependence upon particular context as well as the factors and their connections (Sinclair & Baglioni, 2014). However, only few previous studies have used theoretical frameworks/models, yet no study entirely applied the theory and discussed theory's usability for the research on social innovation (Rana et al., 2014). There is limited and low quality theoretical work in the field of social innovation which is practice led (Sinclair & Baglioni, 2014). Therefore, theoretical frameworks and concepts from other fields of study can be used for enhancing the understanding of social innovation. Among different theoretical sources that provide useful insights and can help in conceptualising the field of social innovation, provided by different authors specifically Mulgan (2012) and Howaldt et al. (2014), 'innovation studies' is commonly mentioned. The link between social innovation and innovation studies as its theoretical source and appropriateness to this study is shown in Table 6. Whereas, there is fundamental potential in theoretical insights from innovation studies for understanding the social innovation process. Lettice and Parekh (2010) also transferred the lessons from innovation studies to better understand the social innovation process.

Thus, this study considers theoretical insights from the innovation studies on the innovation process for studying social innovation process, discussed as follows:

Meissner and Kotemir (2016) assert that there are two main analytical approaches to understand and model innovation process in innovation studies: 1) innovation management process models and 2) conceptual process models/ theoretical innovation models (see Table 7). The innovation management models explain innovation process, yet they do not explain its complexity through factors- drivers and barriers, which is theoretically explained by conceptual/theoretical models. However, the process models recognize the relevance of addressing factors, facilitators and barriers (Meissner & Kotemir, 2016). Accordingly, Marinova and Phillimore (2003) theoretically explained and combined Rothwell's (1994) process models within theoretical models for comprehensive understanding of innovation. As, these models exhibit

Table 6: Link of Innovation Studies with Social Innovation in this Research

Strengths of Innovation Studies	Appropriateness for this Research
As already mentioned, innovation studies possess interdisciplinary character, scientific openness and its characteristics as a boundary-spanning field of research (Fagerberg & Verspagen, 2009). Its integration with social innovation will be beneficial for both (Edwards-Schachter & Wallace, 2017; Van der Have & Rubalcaba, 2016).	This research focuses on social innovation, which has much to learn from broader field of innovation studies (Mulgan, 2012). Insights from innovation studies can be used for understanding & studying social innovations and body of knowledge in innovation studies can be extended by integrating new knowledge on social innovation and locating it in comprehensive theory of innovation (Howaldt et al., 2014).
The building blocks, achievements and theoretical lens of innovation studies can inform the study of social innovation, build its theoretical foundations, and guide its empirical investigation and interpretation. It is recommended that future research investigate whether established concepts and theoretical lenses from innovation studies are transferable to the concept of social innovation (Howaldt et al., 2014).	The need for theoretical foundation of social innovation is emphasized in literature for guiding the inquiry and moving forward the research on social innovation. Yet the field of social innovation lacks strong theoretical foundation (El-Haddadeh et al., 2014; Krlev et al., 2014; Massey & Johnston-Miller, 2016; Sinclair & Baglioni, 2014; Weerakoon et al., 2016). This research requires theoretical foundation for social innovation.
It is already discussed that both innovation studies and practice-led perspective on social innovation share overlapping themes regarding innovation/social innovation characteristics, and understanding innovation/ social innovation as a process, and emphasizing how it occurs within a specific context (Benneworth et al., 2015; Fagerberg & Verspagen, 2009). The overlapping themes facilitate their integration and future research (Marques et al., 2018).	This study focuses on social innovation process proposed by the practice-led perspective, which is useful but theoretically weak (Choi & Majumdar, 2015; Howaldt et al., 2014). Therefore, a theoretical perspective and a conceptual framework is required to model and explain the social innovation process, the way it emerges and spreads (Cajaiba-Santana, 2014).

similarities despite the difference with respect to the scope/focus of analysis.

Among these models, the social innovation process framework by Murray et al. (2010) resembles the innovation management process models and corresponds with a major shift that has occurred with respect to the understanding of process models, see Table 8.

However, like innovation process models, studying social innovation process alone will not add much insight, as complexity cannot be reduced to stages and requires a conceptual /theoretical model that suits to theoretically explain the social innovation process through influential factors. Moreover, different researchers have

Table 7: Main Analytical Approaches to Understand and Model Innovation Process, Adopted by Meissner and Kotsemir (2016)

Innovation Management Process Models	Conceptual/Theoretical Innovation Models
Include Rothwell's (1994) five generations of models: Technology Push, Market Pull, Coupling Model, Integrated Model, Networking-Model, and Chesbrough's (2006) open innovation model.	Include Marinova and Phillimore (2003) six generations of innovation models: Black Box Model, Linear Model, Interactive Model, System Model including National, Regional or Sectoral Innovation System, Evolutionary Model, and Innovation Milieu Model.
These models emphasize on innovation process stages, analyse innovation management strategies at firm level, and have implication for organizing innovation activities. However, they are regarded as schematic descriptions and lack a strong theoretical foundation that explains real models that are complex.	These models better describe the reality of innovation process by providing theoretical background and explanation for the factors that influence success or failure of innovation process and determine its complexity. The conceptual models are regarded as theoretical constructs that involve tools & instruments to design conducive factors.

Table 8: Match of Social Innovation Process with Shift in Understanding of Innovation Process in Innovation Studies

Shift in Understanding of Innovation Management Process Models	Nature of Social Innovation Process
From linear process driven by technology push or market pull to non-linear, complex, iterative & interactive process that incorporates several feedback loops and overlap between stages	Social innovation process is not always sequential, it is iterative and interactive process consisting of feedback loops & overlapping spaces between the stages, and open to shortcuts
From few factors to a more comprehensive set of factors (Marinova & Phillimore, 2003; Meissner & Kotsemir, 2016).	Social innovation process is influenced by variety of factors (Krlev et al., 2014; Rao-Nicholson, Vorley & Khan, 2017).

proposed variety of factors influencing social innovation (see Table 9) along with their theoretical backgrounds.

Among these researchers, only Bekkers et al. (2013) and Krlev et al. (2014) have provided determinants framework of social innovation consisting of factors influencing social innovation, drawn from innovation studies literature on technological innovation and public sector innovation. Other researchers have also confirmed these factors/determinants. Bekkers et al. (2013) provided specific factors that influence social innovation process, and most of them match with comparatively broader factors provided by Krlev et al. (2014). Although Bekkers et al. (2013) provided a more com-

Table 9: List of Factors Influencing Social Innovation Proposed by Different Researchers

Authors	Theoretical Background	Factors that Influence (facilitate/hinder) Social Innovation Process & Theoretical Background
Bekkers et al. (2013)	Not explicitly mentioned by authors	Actors (different stakeholders such as individual innovation champions, administrative, political, or opinion leaders, users, and organization's role), institutions (formal & informal), demands for innovations, resources including knowledge & technology, learning process, as well as interactions among actors, and between actors & institutions
Krlev et al. (2014) framework conditions include institutional, political, societal climate and resources	The factors include the innovator's (individual & organization) entrepreneurial activities drawn from entrepreneurial perspective, framework conditions drawn from (neo) institutionalism theory & resource dependence theory, and their interactions drawn from structural functional theory.	Innovator's (individual & organization) entrepreneurial activities, framework conditions such as institutions including demands for social innovation, and resources, and interactions of innovator & institutions
Cajaiba-Santana (2014)	Agent/entrepreneurial-individualistic perspective, institutional /structural-socio-structural context and structural functional theory	Individual agents/actors, institutions, and interactions of agents & institutions
Phillips, Lee, Ghobadian, O'Regan, and James (2014)	System of innovation approach	Actors (individuals and organizations), institutions, interaction among actors /networks, interactions of institutions & actors, and interactive learning
Turker and Vural (2017)	Agent/entrepreneurial-individualistic perspective, institutional /structural-socio-structural context and structural functional theory	Individual agents/actors, institutions, and interactions of agents & institutions
Von Jacobi, Nicholls, and Chiappero-Martinetti (2017)	Individual agent/agency and institutional theory	Individual agents/actors & institutions
Sanzo-Perez, Álvarez-González, and Rey-García, (2015)	Resource dependence theory	Resources specifically internal market orietnation capability & ICT competence

prehensive list of important factors yet they did not provide theoretical explanation for social innovation process. Other researchers provided theoretical approaches to social innovation, yet only Krlev et al. (2014) mentioned the social innovation process by Murray et al. (2010) and placed it in the framework. However, they did not discuss how factors influence social innovation process and its stages. Whereas, each stage requires different factors, skills, structures, resources, actions and lessons to manage innovation as well as social innovation process. Moreover, they recommend future research to investigate the factors, as they need further development, whereas Cajaiba-Santana (2014) recommends to apply different theoretical approaches to study social innovation and learn from them and expand mind-set of researchers.

Thus, to have comprehensive view of social innovation process, this study selects a conceptual/theoretical innovation model that: 1) corresponds with nature of social innovation process; 2) has potential to theoretically explain social innovation process; and 3) focus on the important factors that influence social innovation process. Among several conceptual models, system of innovation approach seems to be most appropriate theoretical approach for social innovation process, and complements social innovation process (Howaldt et al., 2014), see Table 10 below:

Table 10: Link of Social Innovation Process with System of Innovation Approach

Social Innovation Process	System of Innovation Approach
Social innovation process is not always sequential, it is iterative process consisting of feedback loops & overlapping spaces between the stages, open to shortcuts, as well as interactive & systematic process	Is an appropriate conceptual framework to explore and study the complex, non-linear, iterative as well as systemic & network-based features of innovation process (Meissner & Kotsemir, 2016; Phillips et al., 2014; Rametsteiner & Weiss, 2006)
Social innovation process is influenced by a set of factors. The main factors/determinants (general ones) include actors, institutions, and interactions (among actors, and between actors & institutions)	It consists of two entities that achieve its overall function to pursue innovation process: 1) components that are actors (individuals & organizations) & institutions, and 2) their interactions (Rametsteiner & Weiss, 2006). The specific functions or activities of system of innovation can be more or less same as factors/determinants that influence the development, diffusion and use of innovations (Edquist, 2006). Therefore, system of innovation is defined as all important factors that influence and explain the innovation process (Meissner & Kotsemir, 2016; Tidd, Bessant & Pavitt, 2005). Innovation occurs in and is part of an overall innovation system context consisting of determinants /factors (Edquist, 2006; Tidd et al., 2005).

Research on social innovation is starting to mobilize the notion of 'social innovation systems', such as by Phillips et al. (2014), Benneworth et al. (2015), Fulgencio and Fever (2016), and Rao-Nicholson et al. (2017). 'Social innovation system' is described as an inter-connection of factors in developing, diffusing, and utilising innovation targeting social issues or needs (Fulgencio & Fever, 2016). Phillips et al. (2014) proposed a more detailed description of social innovation system, where social innovation is the result of a system in which an actor (individual and organization) operates, interacts and forms partnership with other key actors (stakeholders) to acquire resources, capabilities, knowledge & support, and influences institutions and is influenced by institutions that operate within this system. However, they did not discuss how systems of innovation approach explains the social innovation process, and their study lacks empirical evidence. The preliminary readings on social innovation systems do not fully apply systems of innovation approach and limit the conceptualization of system and its relationships. Also, Rao-Nicholson et al. (2017) has applied systems of innovation to social innovation to a limited extent by only analysing some of its components such as organization, institutions and their interactions, yet ignoring others.

Moreover, Phillips et al. (2014) identify the gap in literature that there is need for research to, "Determine more fully the composition and character of the organizations, institutions and mechanisms which constitute this social innovation system." (Phillips et al., 2014, p. 31)

Innovation systems remain one of the hidden issues in social innovation (Benneworth et al., 2015). It is recommended that future research needs to apply systems of innovation as a theoretical lens and analytical framework for social innovation. Thus, this study will understand and theoretically explain the social innovation process and factors that influence it by applying system of innovation approach. However, viewing system as a whole can be problematic and lead to explosion of possible factors, drivers and factors of innovation. This explosion is avoided by defining the boundary of innovation system, which distinguishes between what is inside the system and what is outside the system (Edquist, 2006). Based on the boundary, the generic systems of innovation approach have three variants. National System of Innovation (NSI) and Regional System of Innovation (RSI) have geographical boundary, are spatially delimited and defined by country and regional context respectively. Sectoral System of Innovation (SSI) has product areas boundary (including goods and services), is sectorally delimited and defined by industrial-sector context. These variants of innovation system are applicable to different 'flavors' of social innovation (Benneworth et al., 2015). Recently, Chavez, Stinnett, Tierney, and Walsh (2016) and Rao-Nicholson et al. (2017) have connected national innovation system with social innovation. Edquist (2006) recommends that the application of specific variant of innovation

system should be according to the objective of the study. Accordingly, sectoral system of innovation approach seems most suitable for this study (see Table 11).

Table 11: Appropriateness of Sectoral System of Innovation for this Research

Objective of this Research	Sectoral System of Innovation (SSI)
To study social innovation process that is non-linear, iterative, and interactive process, and influenced by variety of factors	SSI is derived from systems of innovation and consequently includes all its advantages. It explores and studies the complex, non-linear, iterative & systemic nature of innovation process in sectors (Malerba & Adams, 2013). It is analytical framework for innovation process & its factors/determinants (Edquist, 2006; Malerba, 2002).
To study all important factors (general and specific) influencing social innovation process such as actors, institutions, resources including knowledge and technologies, as well as demand, learning process and interactions among actors, and between actors and institutions.	SSI is a comprehensive approach consisting of all-important factors of social innovation as specific building blocks such as actors, institutions, resources/inputs, networks, demand, learning process, and interactions. These building blocks work together in a planned or unplanned manner to achieve the overall goal of development, diffusion and use of innovations (Edquist, 2006; Malerba, 2002), which corresponds with stages of social innovation process

The table above explains that the sectoral system of innovation is analytical framework that explores and studies the non-linear, iterative, interactive nature of innovation process and consists of all important factors influencing social innovation process (Edquist, 2006; Malerba, 2002; Malerba & Adams, 2013). Whereas, the objective of this research is to study non-linear, iterative, interactive nature of social innovation process, and the factors which influence this process. Therefore, we use sectoral system of innovation approach as theoretical lens to understand and explain social innovation process by integrating building blocks of sectoral innovation system to social innovation, which is done in the next section, 2.7.

2.7. Social innovation process through lens of sectoral system of social innovation approach: building blocks of sectoral system of social innovation

The concept of sectoral innovation systems is developed by Malerba (2002) and described as, "Composed of a set of new and established products or services for specific users and the set of actors who carry out market and non-market interactions for creating, producing and selling of those products or services." (Malerba, 2002, p. 16)

The sectoral systems of innovation possess diversified theoretical perspectives, influenced by system of innovation and evolutionary theory (Malerba, 2002). Accordingly, a sectoral system is broadly considered as the collective outcome that emerges from its components: elements and structure of sectoral system. Elements constitute actors, knowledge, technologies, learning processes, resources/inputs, demand and institutions, and structure constitutes elements' interactions. These elements and structure are also known as building blocks of sectoral system of innovation. Scholars explore the role of building blocks in sectoral system of innovation as the factors that drive innovation within and across sectors (Malerba & Adams, 2013). Within each factor, facilitators and barriers for innovation processes exist. Thus, the building blocks of sectoral system of innovation in case of social innovation process are discussed below, shown in Table 12. As, it is necessary to understand which theoretical elements of innovation studies are salient to the context of social innovation process and then to reintegrate these elements into a coherent and innovation centric theory of social innovation (Benneworth et al., 2015). Accordingly, sectoral system of social innovation is presented. Malerba (2002) description of sectoral system of innovation can be applied to social innovation by describing sectoral system of social innovation as a system composed of a set of new and established products/services that address social needs/problems for specific users that is, public/ citizens, whereas actors carry out interactions for creating, producing and selling of the products or services.

This research brings novelty by applying sectoral systems of innovation approach as it theoretically explain social innovation process by integrating all the important factors into one consistent theoretical approach. These factors influencing social innovation have been discussed separately in previous studies and drawn from different theories. Therefore, novelty is created as principles examined separately in previous work are integrated into one consistent approach (El-Haddadeh et al., 2014).

2.8. Conceptual framework of sectoral system of social innovation

In accordance with above discussion a conceptual framework that represents the social innovation process within sectoral systems of innovation approach is developed (see figure 2) with the help of social innovation (SI) process stages (see section 2.5) and building blocks of sectoral system of innovation (SSI) (see section 2.7). The social innovation process is placed in the center, and surrounded by factors that is, components (elements and structure) of SSI influencing the process. This conceptual framework can form the basis for future empirical inquiries as a tool to empirically examine social innovation process. This is consistent with El-Haddadeh et al. (2014) recommendation that there is a need to develop a new conceptual framework of social innovation for future empirical studies.

Table 12: Integrating Building Blocks of SSI and Social Innovation: Sectoral System of Social Innovation

SSI Building Blocks and their Characteristics	Role in Innovation and Social Innovation
Actors include individuals, organizations (firms and non-firms) and stakeholders (Edquist, 2006; Markard & Truffer, 2008). These actors are heterogeneous, characterized by specific competencies, knowledge, goals, beliefs and so on (Cajaiba-Santana, 2014; Malerba, 2002).	Variety of actors influence/facilitate social innovation (Cajaiba-Santana, 2014; Krlev et al., 2014; Mulgan et al., 2007; Phillips et al., 2014; Turker & Vural, 2017). These actors conduct entrepreneurial activities and innovation activities such as understanding societal need/problem, idea generation- opportunity recognition, idea implementation-designing workable/ novel solution, resources mobilization, risk taking, experimentation, research and development, capacity building, market analysis, field-testing, collaborations, management of networks, and so on. These activities further contribute to innovation process, innovation system functioning and social innovation (Hekkert & Negro, 2008; Krlev et al., 2014; Markard & Truffer, 2008; Mumford, 2002; Osburg & Schmidpeter, 2013). The entrepreneurial activities comply with of stages of social innovation process such as idea generation is vital in proposals of idea stage, idea selection and implementation in prototyping stage, and resources mobilization in sustaining stage (Krlev et al., 2014).
Knowledgebase, technologies and learning processes - A technological regime is described as knowledge environment in which firms operate, which includes knowledgebase properties, accessibility (opportunity for gaining knowledge), technological opportunities (easiness with which firm innovates) and diversification (more than one technology), cumulativeness (extent to which new knowledge can be generated on existing knowledge) and appropriability (protecting innovation from imitation) (Faber & Hoppe, 2013; Malerba, 2002). - Knowledgebase refers to knowledge of a firm about its products, processes and so on (Tidd et al., 2005). Knowledgebase properties include its types (explicit and tacit), and sources of knowledge and technologies (internal and external to firm) (Krlev et al., 2014). - There are different types of learning processes (learning by observing, learning by doing, interactive learning and so on) incorporating learning about product, processes, procedures and so on (Hekkert & Negro, 2008).	Knowledgebase and technologies significantly influence innovation in innovation system (Malerba & Adams, 2013) and social innovation (Chavez et al., 2016). They determine the organization and behaviour of firms, and define sectoral boundaries (Malerba, 2002). Knowledge is needed to develop, implement, replicate and scale-up social innovations, whereas social innovation occurs when knowledge is easily accessed (Mumford, 2002; Osburg & Schmidpeter, 2013). Moreover, technology drives social innovation, and social innovation frequently makes use of technologies (Krlev et al., 2014; Rana et al., 2014), whereas in some cases, new technologies qualify as a novel solution, adapted to meet social needs better or deliver services more effectively and efficiently (Murray et al., 2010; Osburg & Schmidpeter, 2013). Learning forms the basis of innovation in sectoral innovation system (Hekkert & Negro, 2008; Meissner & Kotsemir, 2016), and considered important in social innovation (Kinder, 2010). Greater accessibility and high cumulativeness of knowledge in a sector indicates lower appropriability of innovation and vice-versa (Malerba, 2002).

| Resources and Demand	
Heterogeneous resources include financial, human, and physical resources (Krlev et al., 2014; Osburg & Schmidpeter, 2013). Availability and accessibility (from internal/external source) of sufficient resources is necessary for innovation/social innovation, and represents actors' innovation potential (Hekkert & Negro, 2008; Krlev et al., 2014). Critical resources are difficult to imitate or transfer, and may be provided by different actors where collaboration and coordination is important, and vice-versa (Markard & Truffer, 2008). Demand is created by heterogeneous actors. There are two types of demand- individual and joint demand, and different levels of demand- local, national and international demand. Fluctuations in demand can occur due to changes in customers /markets and their needs (Malerba, 2002).	Resources are considered as a major input needed for innovation process and social innovation, whereas resources mobilization represents one of essential activities (Turker & Vural, 2017). Demand is a significant factor in shaping innovation and social innovation (Krlev et al., 2014). It may be a source of information, defines nature of problems that firms have to solve through innovation, contributes to ideas, provides relevant knowledge and feedback for innovation and develops innovative solutions (Malerba & Adams, 2013).
There are three kinds of institutions: 1) Regulative such as regulations, laws, constitutions, policies and so on; 2) Normative such as cultural values, norms, expectations, customs and so on; and 3) Cognitive institutions such as myths, common beliefs and so on (Scott, 2013). Hard-institutional failure that is, lack of adaptation of or right incentive from regulative institutions, and soft-institutional failure that is, cognitive or normative barriers hinder innovation (Faber & Hoppe, 2013)	Institutions are regarded as important source of innovation (Faber & Hoppe, 2013) and social innovation, involved in all stages of social innovation (Krlev et al., 2014; Murray et al., 2010). They can facilitate or hinder innovation/social innovation by providing support, incentives and so on or by their stabilizing effects and so on, respectively (Edquist, 2006; Phillips et al., 2014)
The interactions include interactions among actors, and interactions between actors and institutions. There are different types of interactions among actors (among firms, between firms and non-firms, and their individuals): market (exchange of transactions) and non-market (collaborations), and strong (shared goals/objectives) and weak (do not share goals/objectives) interactions (Malerba & Adams, 2013). The interactions between actors and institutions consist of complex two-way relationship, where institutions influence actors, and actors influence institutions (Edquist, 2006).	Innovation and social innovation is considered as interactive process (Dawson & Daniel, 2010; Rao-Nicholson et al., 2017). Actors do not undertake innovation and social innovation in isolation and are interconnected (Mulgan et al., 2007). Moreover, interactions between actors and institutions are considered important for, and influence innovation (Edquist, 2006; Malerba, 2002) and social innovation (Cajaiba-Santana, 2014; Krlev et al., 2014; Rao-Nicholson et al., 2017). Interactions contribute to generation, diffusion and use of innovation and social innovation (Phillips et al., 2014).
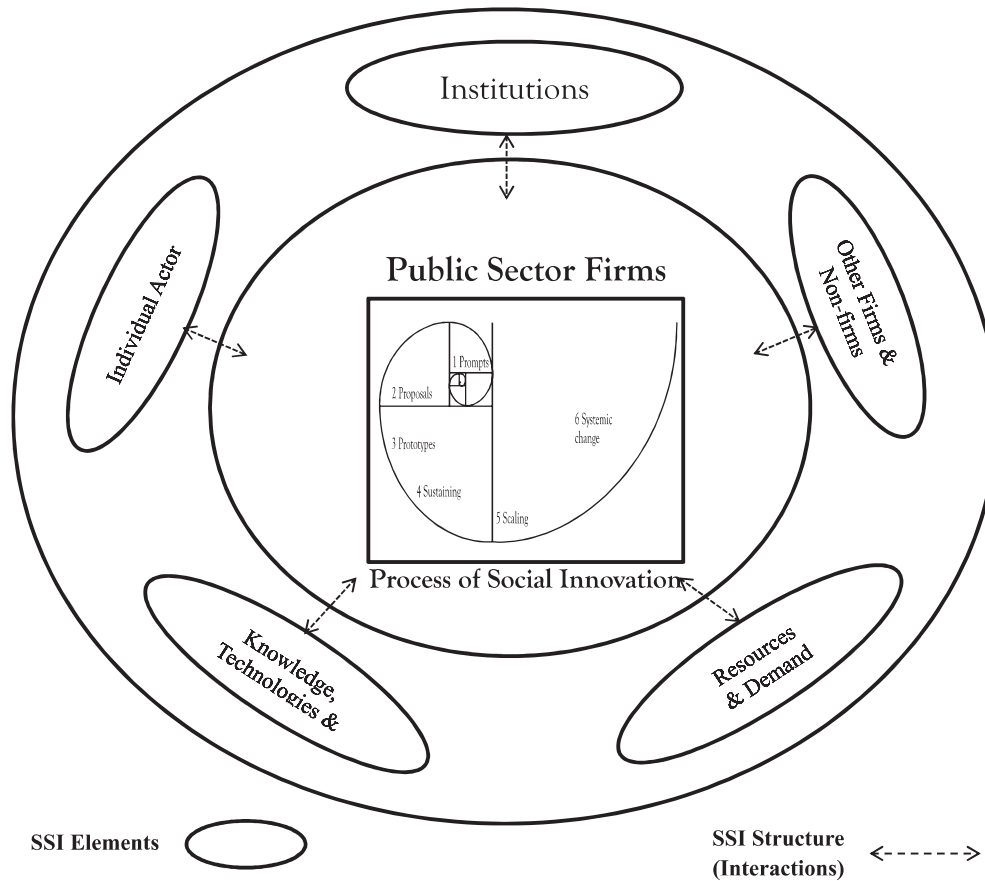
Figure 2: Conceptual Framework of Sectoral System of Social Innovation

3. Discussion and Contributions

This study theoretically applies sectoral system of innovation framework for better understanding of social innovation process and addresses the following knowledge gaps identified through systemic literature review:

1. There is need to conduct academic research on social innovation as it can offer valuable insights on how to develop and promote social innovations (Dawson & Daniel, 2010).

2. Social innovation has been an underdeveloped area in innovation studies, where technological innovation has been the focus (Cunha et al., 2015).

3. The studies on social innovation provide useful insights about the concept and its analysis, yet they do not provide a strong theoretical foundation for social innovation (Cajaiba-Santana, 2014). The theoretical foundations yet need to be utilized to draw a comprehensive theory of social innovation.

4. There is need of research to understand social innovation process and how it is being managed (Cajaiba-Santana, 2014). The literature review shows that only few research articles have discussed/investigated social innovation process whereas none has explained it theoretically. Thus, a theoretical perspecitve and a conceptual framework that includes the specificities of social innovation is required to model and explain the occurrence/process of social innovation that is, the way social innovation emerges and spreads (Cajaiba-Santana, 2014). Therefore, guiding the inquiry and moving forward the research in social innovation (Mulgan, 2012).

5. Innovation system approach mainly focuses on technological innovation and does not cover social innovation into the innovation system framework (Warnke et al., 2016). However, there is need for research to determine social innovation system, its composition and mechanism, and actors and institutions that carry social innovation (Phillips et al., 2014). Moreover, no previous study has specifically applied sectoral system of innovation to social innovation.

4. Suggestions for Future Research

1. Although social innovation is gaining attention in academic research, the field is still emerging. There is a need to conduct future research with the intent to develop sound theoretical foundations deriving from landmark works like systems of innovation theory, open innovation and network innovation models to name a few.

2. It is recommended that future research should be conducted in public sector of developing countries since these countries are characterized by a huge gap between demand for public services and the public sector's ability to deliver these services. Social innovations, if understood and managed effectively may be able to reduce these gaps.

3. It is recommended that future empirical research needs to be conducted on social innovation process, in order to generate a consistent body of knowledge on how this new form of innovation occurs and how it is managed. Therefore, understanding the practice of social innovation will contribute to social innovation process theory and its generalizability or transferability.

4. Future research should investigate the specific sectoral contexts for an improved understanding of social innovation. As characteristics of social innovation and the respective social innovation processes occur in different ways due to sectoral influences, such investigations may enable public sector institutions to manage social innovation programs and projects more effectively.

5. Future research needs to apply sectoral systems of innovation approach to better understand social innovation since the systems approach remains one of the most comprehensive theoretical perspective for comprehending the nature and implementation of various types of innovations. More specifically, such researches can confirm the role of elements and structure of sectoral innovation in influencing social innovation process, and add to generalizability or transferability of the sectoral system of innovation theory.

6. Due to the context-dependent nature of social innovation emphasized through this paper, future research should adapt the case study methodology for a more comprehensive and complete understanding of social innovation. Case study remains one of the leading methodologies in management research that champions the central role of context when investigating a phenomenon of interest.

7. Future research is recommended to apply mixed methods research to comprehensively study social innovation phenomenon as mixed methods can offer a greater depth and compensate for the weaknesses of pure quantitative and qualitative studies.

8. It is recommended that future research needs to investigate the influential factors and condense the complex phenomena into taxonomy of factors, in order to build consensus on set of factors that are common across different studies. Moreover, these factors need to be empirically validated within different contexts to measure their sensitivity to contexts.

5. Conclusion

This article provides literature review that helps to position social innovation, a theoretically weak concept in innovation studies landscape. Taking influence from non-linear and systemic nature of social innovation process and theoretical insights of innovation studies, the link with systems of innovation approach has been established. Furthermore, sectoral system of innovation has been found to be most appropriate theoretical perspective to be applied for comprehensive understanding and explanation of social innovation process. Accordingly, the conceptual framework of this research has been developed with help of knowledge gaps identified in literature review. The conceptual framework incorporated social innovation process stages and sectoral innovation system's building blocks. The knowledge gaps and conceptual framework can been used for further developing research questions and objectives for future studies and guiding empirical inquires.

References

Ayob, N., Teasdale, S., & Fagan, K. (2016). How social innovation 'came to be': Tracing the evolution of a contested concept. *Journal of Social Policy, 45*(4), 635-653.

Bekkers, V., Tummers, L., Stuijfzand, B. G., & Voorberg, W. (2013). Social innovation in the public sector: An integrative framework. In LIPSE Working articles. Rotterdam: Erasmus University Rotterdam.

Benneworth, P., Amanatidou, E., Edwards-Schachter, M., & Gulbrandsen, M. (2015). *Social innovation futures: beyond policy panacea and conceptual ambiguity.* Working paper for the TIK Group Series No. 20150127

Bund, E., Hubrich, D. K., Schmitz, B., Mildenberger, G., & Krlev, G. (2013). Report on innovation metrics - Capturing theoretical, conceptual and operational insights for the measurement of social innovation. *A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE). Brussels: European Commission: European Commission - 7th Framework Programme.*

Cajaiba-Santana, G. (2014). Social innovation: Moving the field forward. A conceptual framework. *Technological Forecasting and Social Change, 82*(1), 42-51.

Caulier-Grice, J., Davies, A., Patrick, R., & Norman, W. (2012). Defining social innovation. *A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE), European Commission – 7th Framework Programme. Brussels.*

Chavez, V. A., Stinnett, R., Tierney, R., & Walsh, S. (2016). The importance of the technologically able social innovators and entrepreneurs: A US national laboratory perspective. *Technological Forecasting and Social Change,121*(1), 205-215.

Chesbrough, H. (2006). *Open innovation: Researching a new paradigm.* New York: Oxford University Press.

Choi, N., & Majumdar, S. (2015). Social innovation: Towards a conceptualization. In S. Majumdar, S. Guha & N. Marakkath (Eds.), *Technology and innovation for social change.* India: Springer.

Cunha, J., Benneworth, P., & Oliveira, P. (2015). Social Entrepreneurship and social innovation: A conceptual distinction. In L. M. C. Farinha, J. J. M. Ferreira, H. L. Smith & S. Bagchi-Sen (Eds.), *Handbook of research on global competitive advantage through innovation and entrepreneurship* (pp. 1-22). US: IGI Global.

Dawson, P., & Daniel, L. (2010). Understanding social innovation: A provisional framework. *International Journal of Technology Management, 51*(1), 9-21.

Edquist, C. (2006). Systems of innovation: Perspectives and challenges. In J. Fagerberg, D. C. Mowery & R. R. Nelson (Eds.), *The Oxford handbook of innovation.* New York: Oxford University Press.

Edwards-Schachter, M., & Wallace, M. L. (2017). 'Shaken, but not stirred': Sixty years of defining social innovation. *Technological Forecasting and Social Change, 119*(1), 64-79.

El-Haddadeh, R., Irani, Z., Millard, J., & Schröder, A. (2014). Toward a coherent methodological framework for examining social innovation in the public sector. *Information Systems Management, 31*(3), 250-258.

Faber, A., & Hoppe, T. (2013). Co-constructing a sustainable built environment in the Netherlands—Dynamics and opportunities in an environmental sectoral innovation system. *Energy Policy, 52(1),* 628-638.

Fagerberg, J., & Verspagen, B. (2009). Innovation studies—The emerging structure of a new scientific field. *Research Policy, 38*(2), 218-233.

Fairweather, G. W. (1967). *Methods for experimental social innovation.* Oxford, England: John Wiley & Sons.

Fulgencio, H., & Fever, H. L. (2016). What is the social innovation system? A state-of-the-art review. *International Journal of Business Innovation and Research, 10*(2-3), 434-452.

Hekkert, M. P., & Negro, S. O. (2008). Functions of innovation systems as a framework to understand sustainable technological change: Empirical evidence for earlier claims. *Technological Forecasting and Social Change, 76*(4), 584-594.

Howaldt, J., & Schwarz, M. (2010). Social innovation: Concepts, research fields and international trends. *A deliverable of the project: 'International Monitoring' (IMO)*

Howaldt, J., Butzin, A., Domanski, D., & Kaletka, C. (2014). Theoretical approaches to social innovation - A critical literature review. *A deliverable of the project: 'Social Innovation: Driving Force of Social Change' (SI-DRIVE).*

Jiang, M., & Thagard, P. (2014). Creative cognition in social innovation. *Creativity Research Journal, 26*(4), 375-388.

Kinder, T. (2010). Social innovation in services: Technologically assisted new care models for people with dementia and their usability. *International Journal of Technology Management, 51*(1), 106-120.

Krlev, G., Bund, E., & Mildenberger, G. (2014). Measuring what matters—Indicators of social innovativeness on the national level. *Information Systems Management, 31*(3), 200-224.

Lettice, F., & Parekh, M. (2010). The social innovation process: Themes, challenges and implications for practice. *International Journal of Technology Management, 51*(1), 139-158.

Malerba, F. (2002). Sectoral systems of innovation and production. *Research Policy, 31*(2), 247-264.

Malerba, F., & Adams, P. (2013). Sectoral systems of innovation. In D. Mark, M. G. David & P. Nelson (Eds.), *The Oxford handbook of innovation management.* UK: Oxford University Press.

Marinova, D., & Phillimore, J. (2003). Innovation models. In L. V. Shavinina (Ed.), *The international handbook on innovation* (pp. 44-53). Oxford: Elsevier.

Markard, J., & Truffer, B. (2008). Actor-oriented analysis of innovation systems: Exploring micro–meso

level linkages in the case of stationary fuel cells. *Technology Analysis & Strategic Management, 20*(4), 443-464.

Marques, P., Morgan, K., & Richardson, R. (2018). Social innovation in question: The theoretical and practical implications of a contested concept. *Environment and Planning C: Politics and Space, 36*(3), 496-512.

Martin, B. R. (2013). Innovation studies: An emerging agenda. In J. Fagerberg, B. R. Martin & E. S. Andersen (Eds.), *Innovation studies: Evolution and future challenges*. Oxford: Oxford Scholarship Online.

Massey, A., & Johnston-Miller, K. (2016). Governance: Public governance to social innovation? *Policy & Politics, 44*(4), 663-675.

Meissner, D., & Kotsemir, M. (2016). Conceptualizing the innovation process towards the 'active innovation paradigm'—Trends and outlook. *Journal of Innovation and Entrepreneurship, 5*(14), 1-18.

Moulaert, F., Martinelli, F., Swyngedouw, E., & Gonzalez, S. (2005). Towards alternative model(s) of local innovation. *Urban Studies, 42*(11), 1969-1990.

Mulgan, G. (2006). The process of social innovation. *Innovation: Technology, Governance, Globalizations, 1*(2), 145-162.

Mulgan, G. (2012). Social innovation theories: Can theory catch up with practice? In H.-W. Franz, J. Hochgerner & J. Howaldt (Eds.), *Challenge social innovation: Potential for business, social entrepreneurship, welfare and civil society* (pp. 19-42). Berlin: Springer.

Mulgan, G., Tucker, S., Ali, R., & Sanders, B. (2007). *Social innovation: What it is, why it matters and how it can be accelerated*. Oxford: Skoll Centre for Social Entrepreneurship.

Mumford, M. D. (2002). Social innovation: Ten cases from Benjamin Franklin. *Creativity Research Journal, 14*(2), 253-266.

Murray, R., Caulier-Grice, J., & Mulgan, G. (2010). *The open book of social innovation*. London: National endowment for science, technology and the art.

Osburg, T., & Schmidpeter, R. (2013). *Social innovation: Solutions for a sustainable future*. London: Springer.

O'Sullivan, D., & Dooley, L. (2008). *Applying innovation*. Thousand Oaks, CA: Sage Publications.

Phillips, W., Lee, H., Ghobadian, A., O'Regan, N., & James, P. (2014). Social innovation and social entrepreneurship: A systematic review. *Group & Organization Management, 40*(3), 428-461.

Phills, J. A., Deiglmeier, K., & Miller, D. T. (2008). Rediscovering social innovation. *Stanford Social Innovation Review, 6*(4), 34-43.

Pol, E., & Ville, S. (2009). Social innovation: Buzz word or enduring term? *The Journal of Socio-Economics, 38*(6), 878-885.

Rametsteiner, E., & Weiss, G. (2006). Innovation and innovation policy in forestry: Linking innovation

process with systems models. *Forest Policy and Economics, 8*(7), 691-703.

Rana, N. P., Weerakkody, V., Dwivedi, Y. K., & Piercy, N. C. (2014). Profiling existing research on social innovation in the public sector. *Information Systems Management, 31*(3), 259-273.

Rao-Nicholson, R., Vorley, T., & Khan, Z. (2017). Social innovation in emerging economies: A national systems of innovation based approach. *Technological Forecasting and Social Change, 121*(1), 228-237.

Rothwell, R. (1994). Towards the fifth-generation innovation process. *International Marketing Review, 11*(1), 7-31.

Sanzo-Perez, M. J., Álvarez-González, L. I., & Rey-García, M. (2015). How to encourage social innovations: A resource-based approach. *The Service Industries Journal, 35*(7-8), 430-447.

Scott, W. R. (2013). *Institutions and organizations: Ideas, interests, and identities* (4th ed.). Los Angeles, CA: Sage Publications.

Sinclair, S., & Baglioni, S. (2014). Social innovation and social policy– Promises and risks. *Social Policy and Society, 13*(3), 469-476.

Tidd, J., Bessant, J., & Pavitt, K. (2005). *Managing innovation: Integrating technological, managerial organizational change.* New York: Wiley.

Turker, D., & Vural, C. A. (2017). Embedding social innovation process into the institutional context: Voids or supports. *Technological Forecasting and Social Change, 119*(1), *98-113*

Van der Have, R. P., & Rubalcaba, L. (2016). Social innovation research: An emerging area of innovation studies? *Research Policy, 45*(9), 1923-1935.

Van Wijk, J., Zietsma, C., Dorado, S., de Bakker, F. G., & Martí, I. (2019). Social innovation: Integrating micro, meso, and macro level insights from institutional theory. *Business & Society, 58*(5), 887-918.

Von Jacobi, N., Nicholls, A., & Chiappero-Martinetti, E. (2017). Theorizing social innovation to address marginalization. *Journal of Social Entrepreneurship, 8*(3), 265-270.

Warnke, P., Koschatzky, K., Dönitz, E., Zenker, A., Stahlecker, T., Som, O., & Güth, S. (2016). *Opening up the innovation system framework towards new actors and institutions* (No. 49). Fraunhofer ISI Discussion Papers Innovation Systems and Policy Analysis.

Weerakoon, C., McMurray, A., Rametse, N., & Douglas, H. (2016). *A preliminary bibliographic analysis of the social innovation literature.* Proceedings of SIERC 2016: Collaborating for impact. New Zealand

Ziegler, R. (2010). Innovations in doing and being: capability innovations at the intersection of schumpeterian political economy and human development. *Journal of Social Entrepreneurship, 1*(2), 255-272.