

## Co-creation Knowledge Storage Model for Local Government Innovation

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**Abstract.** Co-creation is a concept that diverse stakeholders of a community communicate and cooperate based on IT so that all participants create new values. To effectively utilize co-creation for regional innovation, knowledge storages are necessary that will support users to find measures to solve newly arising community problems with existing success and failure cases. Therefore, in this study, a knowledge storage model was developed to systematically store cases of regional innovation and community problem solving, effectively retrieve cases required by users, and utilize co-creation strategy. To this end, literature review and expert interviews were conducted to analyze user requirements and the concept, functions, architecture, data structures and attributes of co-creation knowledge storages were defined. In addition, processes through which knowledge storages utilized for regional innovation were presented as a scenario. This study contributed to science research data related to co-creation knowledge storages for regional innovation are accumulated and follow-up studies on knowledge storages are induced.

**Keywords:** Co-creation, Knowledge Storage Model, Local Government Innovation, Regional Innovation

### 1 Introduction

Diverse problems exist in communities where we live such as jobs, growth, welfare, education, and aging (Hong et al., 2014). Community problems are very extensive and complicated. Primary problems are sometimes expanded into secondary problems depending on viewpoints to approach the problems, and communities make efforts to prevent, mitigate, and solve such problems (Kim, 2002). Although local governments that are at the center of resolution of community problems develop and implement various policies, the low effectiveness of government led policies and the inefficiency of similar overlapping policies are pointed out as problems (Kim, 2011). To overcome these problems, recently, the local governments have been implementing government innovation and people oriented policies through ‘opening, sharing, communication, and cooperation’.

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IT enabled communication and sharing among diverse stakeholders in communities.

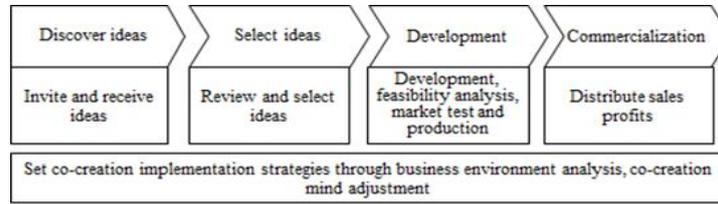
To effectively utilize co-creation models, referring to previous cases of regional innovations is also quite meaningful. Solutions for social problems can be sought from existing cases and the process and method of implementation of the solutions can be referred to. In addition, to solve regional problems and achieve regional innovation through co-creation models, referring to existing exemplary cases and similar cases is more necessary and utilizing previous accumulated knowledge is effective. Therefore, knowledge storages are necessary so that measures to solve newly arising community problems can be found and related methods and procedures can be referred to by effectively utilizing success and failure cases of existing regional innovation.

In this study, co-creation knowledge storages that support regional innovation and resolution of social problems will be presented. To develop the knowledge storage model, requirements were analyzed, a conceptual model was presented, and a scenario for the model was organized.

## **2 Theoretical background**

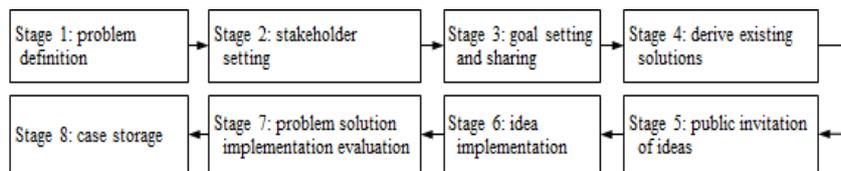
In the area of management, co-creation refers to strategy where enterprises and consumers cooperate with each other to make new values and resultant profits are shared by participants. With co-creation, enterprises obtain creative ideas from consumers and consumer can be provided with the products and services wanted by them along with incentives by participating in enterprise activities (Hong et al., 2014). Studies on co-creation mainly utilized co-creation as a concept for management innovation and related studies have been conducted. Diverse studies have been conducted on the application of the concept co-creation, applying methods, cases of utilization, and outcomes of utilization.

Co-creation models that show methods and procedures for implementation of co-creation have been studied. In a study conducted by Hong et al.(2014), methods and procedures presented in a co-creation implementation strategy through analysis of enterprises' management environments are presented as shown in Fig.1. To implement co-creation, the processes of idea discovery and selection, development of products or services, and commercialization should be undergone. Fig.1 concretely presents the processes through which ideas for new products are discovered with consumers' participation, products are developed and sold, and the benefits generated accordingly are shared with consumers.



**Fig. 1.** Co-creation models' methods and procedures(Source: Hong et al., 2014, p.94) Fig.1. Co-creation models' methods and procedures(Source: Hong et al., 2014, p.94)

In addition to the area of management, co-creation models can be applied to solve social problems. In a study conducted by Hong et al.(2015), methods and procedure in a series of processes through which ideas for Job mismatch are collected from diverse stakeholders such as administrative organs, residents, and specialized institutions, the ideas are turned into policies, and the policies are implemented to solve the problem of job mismatch were presented. Eight stages of processes to define the problem of job mismatch and collect the ideas, evaluate the ideas, implement the best ideas, and then evaluate the results of implementation to solve the problem were presented as shown in Fig.2.



**Fig.2.** Co-creation model for resolution of social problems(Source: Hong et al., 2015)

### 3 Co-creation knowledge storage model

The knowledge storage to be developed in this study enables storing cases of regional innovation and utilizing the cases when co-creation models are applied. To this end, requirements were analyzed, functions were defined, and a co-creation knowledge storage model was developed.

#### 3.1 Requirement analysis

To analyze requirements for co-creation knowledge storage models, knowledge storage, co-creation model, and regional innovation related literature was reviewed and requirements necessary for knowledge storages were analyzed through interviews with experts in information system, co-creation model, and regional innovation. Through the foregoing, requirements for co-creation knowledge storages were derived.

### 3.2 Structure of knowledge storages

The concept and functions of co-creation knowledge storages were defined based on the requirements described in 3.1. The co-creation knowledge storage to be developed in this paper is an information system in which cases of regional innovation can be stored and utilized when co-creation models are applied. The cases are structuralized into basic information and co-creation information before being stored and are used to provide regional innovation related knowledge to users through searches and inference. The co-creation knowledge storage supports co-creation models and platforms.

The knowledge storage is schematized into a block diagram as shown in Fig.3 The knowledge storage supports co-creation models as a subsystem or linked system of co-creation platforms or receive inputs of cases through user interfaces. Major constituting modules are case storages, case storage modules, case management modules, and case inference modules.

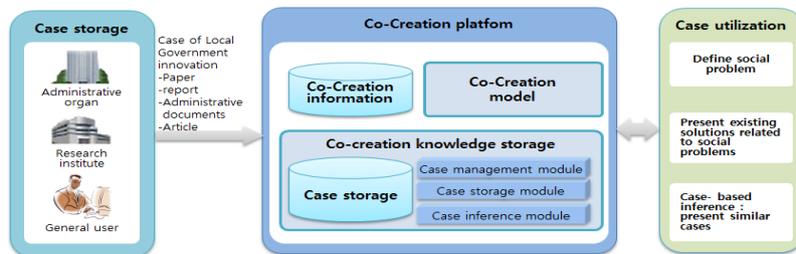


Fig.3. Block diagram of knowledge storages

The co-creation models that are include in co-creation platforms define methods and procedures by stage of co-creation and can be utilized by users when they implement new projects for regional innovation. Through co-creation models, effective measures and methods for resolution of problems in regional innovation referring to manuals for implementation methods by stage and the exemplary cases and similar cases provided by case storages. The results of implementation by stage are entered and the project is stored as a new case in the knowledge storage after completion.

### 3.3 Knowledge storage data model and scenario

Cases are systematically classified and subdivided before being entered into knowledge storages so that the cases can be utilized for co-creation. Cases should be systematized and structuralized for the cases to be utilized in information systems as knowledge. To this end, cases of regional innovation should be collected and the characteristics of the cases and the co-creation model should be analyzed.

The DB schema for case storage is presented. Through the table of basic case information, the basic information for the cases of regional innovation is stored and managed. Information entered in individual stages of co-creation models is managed using the table of progression information by stage. For instance, the process of derivation in stage 4 (existing solution derivation) and the results of the derivation are

stored in the table of progression information by stage. In this case, the case number, stage number (stage 4), item name (existing solution), process of derivation, and the results of derivation can be inputted. To infer similar cases, the criteria for classification, such as the co-creation types, project forms, and case types, can be stored through the project classification table.

The feasibility of the co-creation knowledge storage model of regional innovation was identified through scenarios. The processes of entering existing cases into the knowledge storage, utilization of new projects, and searches for stored cases show that the model includes the requirements for and functions of knowledge storages presented earlier and that there is no problem for use of the knowledge storage by the users.

#### **4 Conclusions**

Currently, local governments and administrative organs make efforts to solve diverse and complicated regional social problems and achieve regional innovation. To this end, recently, Government 3.0 intended to solve problems through citizens' participation has been diffused. In addition, KMS were introduced for efficiency of administrative work and methods to enhance the degree of utilization of the systems have been presented. As such are becoming important and related studies are necessary now.

This study presented a co-creation knowledge storage model that enables utilizing cases of regional innovation for resolution of social problems. This knowledge storage model is an information system model intended to systematically store cases and provide the cases as knowledge that can be referred to for regional innovation, for resolution of social problems, and for regional innovation utilizing co-creation models.

To this end, requirements were analyzed through literature review and expert interview, the concept and functions of knowledge storages were defined, and the co-creation knowledge storage model was presented through the conceptual structure and data structure of knowledge storages. Thereafter, the feasibility of the knowledge storage model was identified through theoretical examples applied with the model.

The knowledge storage presented in this study systematically structuralizes cases of regional innovation before storing them to utilize them as knowledge and provides functions to support co-creation models and platforms. To convert past case data stored in diverse forms into knowledge, classification items for cases were subdivided into case information and co-creation information and were defined in data structures. This way enables searches and inference, effective searches for cases needed by users, and provision of exemplary cases by stage of co-creation.

The contribution and limitation of this paper are also discussed.

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