

공간자산매핑을 이용한 지역사회 능력배양의 모델링에 관한 연구

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Modeling Community Capacity Building Using Spatial Asset Mapping

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요 약

지역사회능력 (community capacity) 개념은 사회경제, 환경 그리고 물리적 배경의 발전지표 및 인자와 연관된 사업을 하는 지역사회 및 지역주민의 능력으로 간주된다. 지역사회발전계획과 관련된 문제점을 효율적으로 분석하는 지역사회의 능력배양은 지리정보시스템을 이용하여 인프라 및 사회경제의 능력향상에 대하여 현 상태를 조사요구 한다. 지역사회의 능력을 증가시키는데 있어 계획된 자산형성의 노력은 지역발전의 일부분으로 볼 수 있다. 공간자산매핑(spatial asset mapping)은 유무형의 자산목록을 만들고 확인하는 일련의 과정이다. 이러한 자산매핑은 인적, 사회문화적, 자연적, 금융적, 디지털적 및 물리적 능력에 관하여 개인, 공동체 그리고 지역사회가 지닌 능력을 조사하며 발전시키는 것을 필요로 한다. 이 연구 목적은 능력배양(capacity building)의 새로운 개념을 제안할 뿐만 아니라 독창적인 자산기반으로 하는 지역사회능력배양의 개념적 모형을 일필지 중심의 공간자산매핑 및 능력매핑과정을 통해서 제시코자 한다.

주요어: 지역사회능력, 공간자산매핑, 자산기반능력배양

ABSTRACT

The concept of community capacity is regarded as the ability of people and communities to do works associated with the determinant factors and indicators of the circumstances of socio-economic, environmental and physical contexts. Building capacity of communities to effectively analyze our problematic issues and planning of community development is often required to scrutinize current status of community of socio-economic and infrastructural capacity development with GIS. We consider community development as a planned effort to build assets that increase the capacity of communities. Spatial asset mapping is the process enabling to identify and make inventories of tangibl

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e and intangible assets. This mapping requires developing a capacity inventory that collects individual, organizational and community capacities in view of human, socio-cultural, natural, financial, digital and physical capacity. The purpose of this research is not only designed to suggest a new concept of capacity building, but also proposes a more creative framework of asset-based community capacity building linking to parcel-based spatial asset mapping and capacity mapping process

KEYWORDS: *Community Capacity, Spatial Asset Mapping, Asset-Based Capacity Building*

INTRODUCTION

There are growing international interests in capacity building that is fashionable topic to increase and strengthen community capacity. Capacity building is used to describe a wide range of activities that strengthen a thing, person, agency and even community so that it can fulfill their missions and undertakings. Although many literatures have addressed this term and applied it to several domains, their models and frameworks might remain to be elusive without clear scrutiny of capacity. The nuance of capacity would be perceived as not only qualitative asset such as performance, skills, power, but also quantitative asset in terms of size, volume, price, etc. Thus, an interpretation of the concept of capacity building varies depending upon their living environments and concerns.

A conceptual model of capacity and hierarchy of capacity building is designed to delineate community capacity. Being different from existing model and framework, an asset mapping or asset-based mapping approach to capacity, capacity building and community capacity is a core concern of individuals, groups, agencies and communities that seek for increase of their resources, capitals, and relevant economic wealths. Asset mapping approach to capacity building helps them to

find their skills, resources and geographic advantages that provide motivation and opportunity of physical, natural, digital, financial, socio-cultural and human capacity in sustainable community. A hexagonal form of asset, called as Hexad assets (Liou and Kim, 2002) is used to explain the mechanism between asset and capacity building that follows a normal process of asset input and its benefit focusing on interactions of cost, capitalization and capacity. Thus, an asset-based capacity building is defined as a tool for measures of asset values and asset capacities. This extension to community capacity might need spatial asset mapping (Liou, 2004) to analyze strength and opportunity of community capacity.

Asset mapping is a process and strategy to find unused or undeveloped assets to boost their ability for community development. In this research, a new concept of asset-based community capacity building framework is proposed to not only measure the ability or performance of geographic features and human beings, but also encompass the concept of capacity and capacity building in conjunction with a part of value mapping and capacity mapping towards sustainable community. A parcel-based spatial asset mapping is designed for a clear understanding of community capacity building.

RELATED WORKS AND CHALLENGES OF CAPACITY BUILDING

There are many definitions of capacity building interpreted by researchers, practitioners and decision-makers that are associated with serious demands for strengthening health promotion (Poole, 1997; Baker and Teaser-Polk, 1998; Smith et al., 2003). Several other needs for researches on capacity building coming from socio-economic development (Kinsley, 1996; Narayan and Cassidy, 2001; Armstrong et al., 2002) and geo-information management (Groot and van der Molen, 2000; Enemark and Ahene, 2003) make a fashionable issue and topic leading to different nuances of capacity building based on their project purposes and research themes. Although some of them focus on three levels of capacity building (individual, organization and community) with a wide variety of indicators to measure community capacity, their framework and list of the types of indicators are still exploratory and descriptive. This might be due to the fact that there are not fully enough designs for holistic view of capacity building on account of versatile environments of capacity. In addition, they do not fully explain the characteristics of capacity how it can extend to capacity building or link to community capacity building.

When applying capacity building to community, it would regard community capacity building as a similar shape of community participation, community competence, community empowerment, community development and social capital. Measuring community capacity (Aspen Institute, 1996:) requires complex and comprehensive

investigations of communal characteristics of indicators and an analytical capacity assessment method because a broad concept of capacity building emanates from various focuses and issues of public health (Kwan et al., 2003), community planning (Goodman et al., 1998), asset mapping (Krezman and McKnight, 1996), social action and change (Chaskin, 2001). Despite many discussions of the concept of capacity building in the literatures, there might be little dispute of the characteristics of capacity and few practices and works of how it is characterized for capacity building. In this respect, there is a similar difficulty of capacity building as to how it can depict various domains of community capacity and what community capacity looks like. Although Chaskin (2001) suggests a definitional framework with case studies and Kwan et al (2003) indicate the problems and issues of community capacity, they explain a narrow filed of public health and general description of many indicators for community capacity. Thus, there might be additional requirements to clarify the reality of community capacity's circumstance when mapping the community and measuring its capacity. There is increasing need for a generic model and framework of capacity building to encompass a specific domain based on community capacity mapping.

FIGURE 1 proposes a new concept of capacity and the hierarchy of capacity building. Capacity often regarding as a kind of performance, ability, capability and potentiality is a qualitative buzzword when particularly assessing the characteristics of an object or a person. This word is also used to measure a quantitative object with which evaluations of size and volume, value and price, and monetary power are associated. Social

approaches to capacity could be regarded as judgment, will, ambition, justice, equity, etc. Thus, capacity building is defined as a process to create enabling abilities of individuals, institutions and communities that realize their potentials, values and prices, labors, skills, learnings, and knowledges in the form of one of assets. FIGURE 1 also shows implicit notions of hidden asset's means or roles to directly or indirectly impact on capacity and capacity building with a certain action and process. It would make questions of asset's functions of how assets could influence upon the extents of capacity building and play a major role in increases of community capacity.

providing them with motivation and opportunity of socio-economic program.

MODELLING OF AN ASSET-BASED CAPACITY BUILDING

Being different from existing models of capacity building, our model hinges on an asset-based capacity building with the help of asset selection theory that considers asset as a type of capacities. An asset is often used for capitals or resources that measures a feature

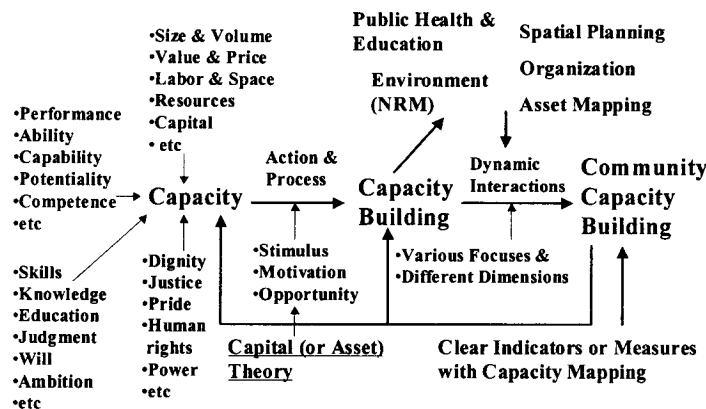


FIGURE 1. A concept of capacity and hierarchy of capacity building

The evolution of capacity to community capacity requires understandings of asset-based capacity building with an economic mechanism of asset capacity's theory. In addition, there are surely legal, institutional and cultural factors that could not be expressed as a capacity, but considered to be distinctive features or customs associated with dignity and fame. Capacity building helps individual, group, agency and community to find their skills, resources and geographic merits

and a person's ability at the socio-economic and physical level. The concept of capacity is considered as various form of asset or capital that can be used to achieve some needs. Assets are broad objects to represent the stock of wealth in a individual, family (groups), agency and community that gives rise to economic flows of capital in terms of inputs, service, productions, outputs and benefits.

Krezman and McKnight (1993) defined assets as the gift, skills and capacities of

individuals, associations and institutions within a community. Asset building emphasizes the development of activities based on the capacities, skills and assets of people and their neighborhoods. Historical evidence indicates that community development takes place only when local community people are committed to investing themselves and their assets, capital, or resources to acquire a type of products and monetary benefits increasing their internal and external capacities. FIGURE 2 illustrates the development of asset capacity stemming from benefits of internal and external asset value. When acquiring assets with a certain service expected, most people intend to increase their asset values as a form of capitalization and make planning for their benefits.

From the physical perspectives of asset, asset capacity is concerned with asset numbers, space or volume, and value that is

internal growth of individual, organizational and communal performance and capability. The development of capacity building concentrates on the internal agenda of asset building and problem-solving capacities of people, organizational associations and institutions, and community. The internal focus stresses the primacy of local asset evaluation, investment, capitalization, benefits and future of their capacity. Meanwhile, asset capacity is impacted by one of major external factors in terms of service system & communication, organizational operation & structure, program & training, and governance & leadership, etc. Usage of and access to Hexad assets often determine capacity building of individuals, organization and community to maintain their basic needs for consumptions, educations and health, etc.

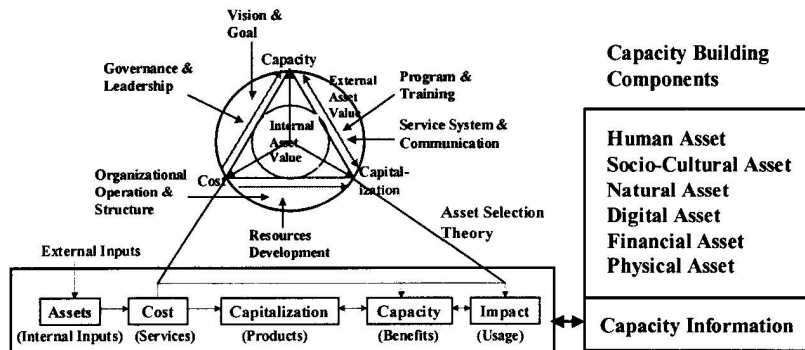


FIGURE 2. An asset-based capacity building

pertinent to ownership rights, comport, performance, speed, maintenance, etc. In the process of asset service delivery, the levels of service requirement will determine capitalization and benefits of asset capacity. An asset-based capacity building, first of all, starts from an examination of cost-benefit analysis of their inputs or investments, and recognition of

COMMUNITY CAPACITY BUILDING WITH SPATIAL ASSET MAPPING

1. An asset-based community capacity building

Although many researchers and organizations have defined and conceptualized community capacity framework, the levels of their works remain to be a starting point of capacity building initiatives and their application and testing is still not yet described. For instances, the Aspen Institute (1966) tells that community capacity is the combined influence of a community's commitment, resources and skills that can be deployed to build on community strengths, problems and opportunities. Chaskin (2001) and Norton et al, (2002) examine that community capacity is the interaction of human capital, organization resources and social capital that can be identified and mobilized to improve the well-being of community. Goodman et al (1998) builds a consensus view on the components of community capacity. Kwan et al (2003) indicate main challenges of measuring community capacity that there are very general definition and vague consensus, different layers of difficulties in finding valid and reliable capacity measures, and a broader concept that is not relevant to sum of measures at the individual level.

With regard to asset-based community capacity building, Krezman and Mcknight's conception (1996) based on community assets expounds individual, association and organization capacities and their capacity inventories with a short description of capacity map. Most of them focus common interests in renewal of community capacity and its development. However, our research approach to community capacity is based on asset mapping to survey, evaluate and map the capacity of relevant assets. This requires an analytical process of capacity assessment with

data collection and its analysis that seems to be a part of GIS undertakings.

2. A framework for community capacity building with spatial asset mapping

Although many literatures have defined the concept of community capacity building and their conceptual frameworks with indicators, there might be little efforts to clearly explicate the essences of community capacity using mapping of communal or regional capacity. Even if they introduce capacity map (Krezman and Mcknight, 1996), there might be few clear models to visualize the reality of asset's value and its capacity as to what assets look like, and how assets could boost capacity building. Therefore, it may require some conceptions of asset mapping in conjunction with asset building.

Asset mapping is the process of identifying and cataloging the inventories of tangible and intangible assets of individuals, of groups, of agencies, of neighborhoods and of communities. Asset mapping is intended to assist capacity-focused development of communities that can be described as spatial representation of the data. Asset map is used to present existing capacity inventories illustrating spatial location and distribution of asset values as to what assets can still be mobilized for their quality of life and community development. Thus, spatial asset mapping is used for portraying asset map with an illustration of capacity mapping that finds unused and unrecognized resources to assist asset building and community capacity building.

Liou and Kim (2002) remarkably explicated

the essence of spatial asset mapping in terms of geometric form of asset, asset type, asset survey process and 3D visualization of digital spatial asset mapping with 1:1 map scale. They would focus on the parcel-based asset mapping over time to describe more details of asset's flows. This previous works can apply to actualizations of community capacity building if there could be a feasible framework of capacity assessment methods. Driving from the concept of capacity (FIGURE 1) and asset-based capacity building (FIGURE 2), it can lead to a conceptual framework of community capacity building that plays a major key role in steering people and community to understand asset capacity and its importance. Figure 3 illustrates an asset-based approach to community capacity building that has three layers consisting of asset building, capacity building and community spatial asset mapping.

digital, financial, natural and physical asset that are used for formulating dimension of capacity building. This hexagonal form of asset provides a creative theory of asset with the basic principle of asset's choice (cost, capitalization and capacity) in association with asset's relationships, behaviors and interactions. More explications are beyond the scope of this study.

The second layer illustrates the level and process of capacity building consisting of micro, meso and macro approach. At the micro level, capacity building for individuals and families are major target groups concerned with program for education, skill, job training and social cares. This level is closely related with household capacity that might be very significant to determine quality of asset capacity and quantity of asset building. At the meso level, organizational capacity refers to

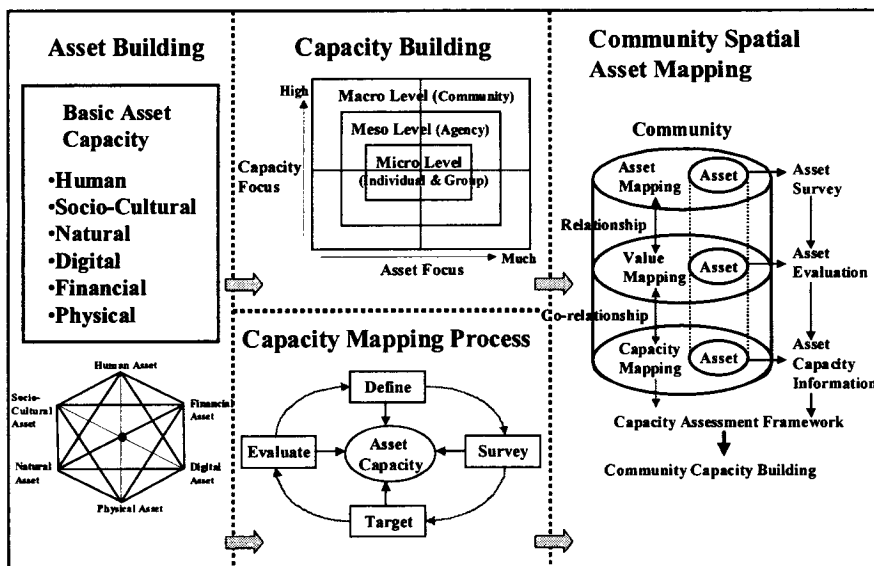


FIGURE 3. A conceptual framework for asset-based community capacity

The first layer shows a hexagonal shape of the resources, knowledges and processes assets consisting of human, socio-cultural, associated with staff, infrastructure,

technology, leadership, program and process management, network and financial resource. In this level, the aim of capacity would intend to improve potential performance of the organization that is used for the ability to meet their goals and achieve overall missions.

At the macro level, community capacity pertains to comprehensive capabilities of indicators of natural resources, people, socio-cultural factor, budget, transportation and infrastructure, etc. In addition, there are many different interpretations of community capacity coming from health promotion, policy and political system, education, social welfare, etc. Thus, there might not be the best way to measure community capacity. Meanwhile, our framework suggests two ways of intended target focus as to how community could make a plan for capacity building in conjunction with asset capacity development. Four quadrants of the relationship between asset and capacity enable community to choose the strategy of capacity-focused development or asset-focused development in accordance with their socio-economic, industrial and technical strengths and opportunities.

The third layer depicts the conceptual model of community spatial asset mapping linking to value and capacity mapping. This three mapping is related or correlated each other depending on the project goal and aims of mapping undertakings. Community asset surveys and asset evaluations seem to be conventional works in GIS businesses. But there might be still few models how asset mapping could be characterized and would impact on the shape of capacity mapping in accordance with socio-economic development. However, spatial asset mapping provides an

analytical tool of asset capacity indicators for an interpretation of individual, institutional and communal economic development. Many indicators of community capacity assessment could be described as the spatial pointer of a household, group, agency and community when classifying and analyzing the strength and weakness of socio-economic development.

IMPLEMENTING SPATIAL ASSET MAPPING FOR COMMUNITY CAPACITY BUILDING

Measuring asset-based community capacity building may require full scale of asset survey and mapping in collaboration with additional different methods such as household survey, interview, community profile, focus group, etc. There is no one best method for collecting capacity informations since community assets might be too immense to be accurately measured. Meanwhile, a feasible way for asset data collection and evaluation at the household and community level could use parcel-based asset maps that explicate usable and potential resources and assets. Each parcel has its own asset boundary that illustrates tangible or intangible asset information on human, physical, natural, socio-economic, financial and digital characteristics. In terms of collection of asset information, community profile based on statistics is conventionally used for understandings of existing, potential and new assets. The tool for data collection uses the Web and email surveys, newspaper inserts, PDA, air photo, and various registers.

FIGURE 4 illustrates a part of community

spatial asset mapping with capacity mapping process. It shows a type of Web service for asset data input that links to parcel-based spatial asset map and asset capacity survey register. The process of community capacity

requires issues of different parts of asset's estimators that is beyond the scope of this research since evaluations of many intangible assets are concerned with economic or financial knowledge and expertise.

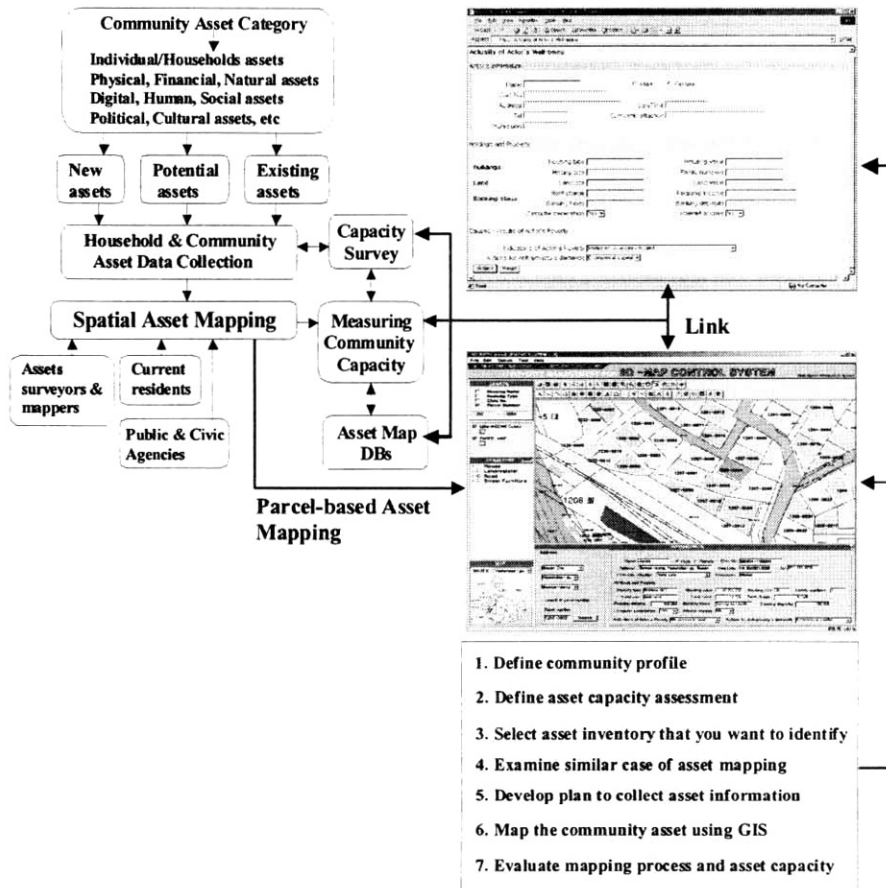


FIGURE 4. Parcel-based spatial asset mapping for community capacity

mapping might be a parallel undertaking when spatial asset mapping is carried out. Measuring community capacity requires three types of mapping shown in FIGURE 3 that relates to capacity survey and its assessment guideline in association with different processes of valuation and capacity assessment. Value mapping linking to an evaluation of asset capacities

The upper-right window could be used for the Web services to get information that each parcel has six asset's attributes and then put it into an asset map database linking to 2D asset map in accordance with asset mapping process. In asset mapping process, each parcel could show us very dynamic visualization of three layers illustrated in

FIGURE 3 if asset joins or asset flows can be presented as a process of capacity mapping or a change of capacity's powers.

Although this implementation does not show more details of physical sub-process of capacity mapping, it may include several different methods pertaining to household survey, interviews, participatory observations, community survey and others. A definite collection of intangible asset capacity should be related to analytical methods of economic geography and social mapping.

CONCLUSION

Even many reports discuss the concept of capacity building and its framework for community capacity, there is still a lack of agreement as to what community capacity means and how it can be characterized. They would focus on finding measures and indicators of community capacity while less emphasizing sources of capacity and capacity building. In addition, a general understanding of capacity would lead to an ambiguous shape of capacity building and community capacity. Asset mapping approach to capacity, capacity building and community capacity might have an effective way to touch scopes and extents of their asset value and asset capacity. Individuals, groups, agencies and communities seek for increase of their resource, capital, and relevant economic wealth

In this research, a model of asset-based capacity building is designed to explicate a mechanism between asset and capacity as to how asset's input could lead to benefits of capacity building in association with effects of cost, capitalization and capacity. A framework

of asset-based community capacity is also created to expound the needs for spatial asset mapping that enables to assist value mapping or capacity mapping. A hexagonal asset mapping related to capacity could analyze six assets capacity.

Meanwhile, there are also limitations of spatial asset mapping approach to community capacity that has many different capacity indicators to be measured. Like other researches of asset mapping, it does not show how assets can be visualized in geographic space because intangible assets might have impossible map's abilities. Instead, a major contribution of this research is a creation of consistent conception of capacity building with an extended spatial asset mapping that links to community capacity mapping process. An illustration of parcel-based asset mapping will not only suggest immense applications for measuring socio-economic divide, individual asset poverty, and degrees of sustainable development, but also indicate further researches on demands of capacity assessment framework in various geographic domains and community socio-economic capacity at the level of geo-information management. **KAGIS**

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