

Competency Theory and Practice for Developing a Extension Competency Model

농촌지도 역량모델 개발을 위한 이론과 실제

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요 약

본 연구는 국내 농촌지도인력 역량모델 개발을 위한 기초 연구로서 역량의 정의, 역량모델 개발방법, 인적자원개발을 위한 역량모델 활용 현황에 대한 문헌을 고찰하였다.

역량은 사용되는 상황이나 맥락에 따라서 다양하게 정의되고 있어 사전적인 정의와 다양한 연구자들의 역량의 정의에 대한 이론, 특정한 조직이나 직업군에서 사용되고 있는 역량의 정의를 비교 분석하였으며, 결과적으로 역량은 개인의 역할 수행과 직무성과와 상관관계가 있으며 훈련과 개발을 통하여 개선되어질 수 있는 관련된 지식, 기술, 태도의 집합체로 정의하였다.

역량모델을 개발하는 방법도 다양한데, 초기단계에서는 탁월한 직원과 일반 직원의 특정한 업무추진사례를 인터뷰와 관찰을 통하여 분석하여 이들 간에 차이를 가져오는 특성이나 행동을 추출하는 직무역량진단법이 주로 활용되었다. 이 방법에는 많은 비용과 시간이 소모되어 이를 간소화한 여러 가지 방법이 개발되었다. 또한 기존 직원 특성 분석보다 다양한 정보원과 미래에 대한 가정을 활용하여 바람직한 직무 결과와 역량, 역할을 추출하는 방법도 개발되었으며 직업이 빠르게 변화하는 시대적인 특성상 이런 방법의 활용이 확대되고 있다. 이

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런 다양한 방법 중 역량 모델을 활용할 직무나 조직의 특성에 맞는 방법을 선택하여 적용하여야 한다.

역량모델을 활용한 인적자원개발을 통하여 기업뿐만 아니라 정부조직에서도 효율적인 직원 역량 개발, 개인과 조직의 성과 향상 등의 효과가 나타나고 있으며, 앞으로 농촌지도조직에서도 지도인력 역량 개발과 지도사업의 효율성을 향상을 위하여 역량모델을 개발 활용할 필요성이 있다.

주요어(Key words): 농촌지도(extension), 역량(Competency),
역량모델(Competency model), 인적자원개발(Human
resource development)

1. Introduction

Since McClelland(1973) has proposed to use competence tests instead of traditional intelligence tests for predicting job success and improving performance as well, various trials to use the competence concept have been implemented in organizations. Especially the notion of core competence suggested by Prahalad & Hamel(1990) has accelerated the use of competence approaches in many private companies. Seeing the diversified corporation as a large tree, the core competence can be regarded as the root system that provides nourishment, sustenance, and stability. That is, the core competencies support company's long run competitiveness. Since core competencies are built through a process of continuous improvement and enhancement, they define core competencies as the collective learning in the

organization.

In line with their emphasis on collective learning in the organization to acquire core competencies, Senge(1990) suggests five learning disciplines in order to solve the problem of organization's learning disability, and to build effective learning organization. Here discipline means developmental path for acquiring certain skills or competencies. The authors emphasize in common that organization has to build core competencies by continuous collective learning process or has to be a learning organization that responds to changes in its environment by learning on a strategic level.

Van den Ban(1997) pointed out that an extension agency should become a learning organization in order to learn more rapidly, to adjust to its rapidly changing environment, and, in turn, to grasp the opportunities to perform new roles and to provide farmers better extension services. Competency development approaches can make the concept of the learning organization practical(Mulder, 2000), and, in turn, can enhance individual and organizational performance.

Emphasizing that employees are the most valuable assets of the Extension System, Maddy et al.(2002) recommended that the extension integrate core competencies and strategies throughout the extension system as standard practices for effective extension programming. By doing so, the extension system will enhance the effectiveness of the Extension employee, increase its capability to better serve customers, and support

and reflect a strong commitment to life long learning of extension professionals.

2. Definitions of Competence / Competency

Competence / competency has been defined differently according to the contexts. Chappell(1996) viewed that competence is a contested concept, the meaning of which is shaped by those who use it. Stoof et al.(2002) pointed out that there is no widely accepted definition of competence and this leads to confusion among students, employees, and training and development professionals. Fletcher(1997) also agreed the variety of competence definition and suggested that organization's definition did not need to be matched with those of others, and that what is essential is that everyone involved in the development project and in the further use of the defined competences had a common understanding of the contexts of defining or using competency concept.

Various definitions of competency and competence could be found in dictionaries, articles, books, and organizations or professions using competency concept. Firstly, the definitions of competence / competency were investigated in dictionaries. In dictionaries, competency was regarded as the same word with competence and only the meaning of competence was included in the dictionaries.

In the Merriam Webster's Online Dictionary, competence is 'the quality or state of being competent'. In the Webster Dictionary, competency is 'the state of being competent, fitness, ability, adequacy or power'. It has added another definition, 'the quality of being adequately or well qualified physically and intellectually, especially possession of the skill and knowledge required(for a task)'. The Concise Oxford English Dictionary in English Dictionaries & Thesauruses defines the competence as 'the quality or extent of being competent'. In the Oxford Dictionary of English(2nd ed.) in English Dictionaries & Thesauruses, competence is defined as 'the ability to do something successfully or efficiently'. A Dictionary of Psychology in Politics & Social Sciences explains competence as 'the capacity, skill, or ability to do something correctly or efficiently, or the scope of a person's or a group's ability or knowledge'.

The Dictionary of the English Language(4th ed., 2000) has two definitions. One is 'the state or quality of being adequately or well qualified; ability'. The other is 'a specific range of skill, knowledge, or ability'. It also has some explanations of synonyms of competence such as ability, capacity, faculty, talent, skill, competence, aptitude as below:

These nouns denote qualities that enable a person to achieve or accomplish something. Ability is the mental or physical power to do something. Capacity refers to the potential for acquiring that power. Faculty denotes an inherent

ability. Talent emphasizes inborn ability, especially in the arts. Skill stresses ability acquired or developed through experience. Competence suggests the ability to do something satisfactorily but not necessarily outstandingly. Aptitude implies inherent capacity for learning, understanding, or performing (The Dictionary of the English Language, 2000).

From this comparison of synonyms, those terms were differentiated a bit clearly. Summing up, seeing various definitions of competence from the dictionaries, competence is related to ability, skill, knowledge, or capacity to be adequately or well qualified, or to do something(a task) successfully, efficiently, or correctly.

Secondly, the researcher reviewed scientific articles and books regarding the definitions of competency. Three works analyzed the concept of competence thoroughly(Mulder, 2000; Stoof, et al., 2002; Van Loo & Semeijn, 2001). Mulder(2000) classified the contexts in which the concept of competency is used into six practical contexts, which are: (1) organizational strategy context using core competencies, (2) personnel management context(HRM) such as using competence profiles for selecting, placing, assessing and developing personnel, (3) training and development context (HRD) like utilizing competence oriented assessments to find gap between desired and existent competencies, (4) education and labor link context for adapting the curriculum for professional education to changing demands

of labor market with the aid of competence profiles, (5) professional development context such as professional associations' approaches to build their own competence framework for registration, licensure, self development or self evaluation of their members, and (6) sectoral training policy or economic structure policy context. He also classified competence definitions into four groups such as: (1) competence as core competence of organization, (2) job or task oriented competence, (3) competence as the capability of employees or learners, and (4) competence as an integral cluster of knowledge, skill and attitude aspects. After reviewing a number of important dimensions such as learnability, performance orientation, specificity, behavior, etc, he suggested a working definition of personal competencies: integrated performance oriented capabilities, which consist of clusters of knowledge structures and also cognitive, interactive, affective and where necessary psychomotor capabilities, and attitudes and values, which are conditional for carrying out tasks, solving problems and more generally, effectively functioning in a certain profession, organization, position or role.

Van Loo & Semeijn(2001) tried to have sound understanding of the competence concept before designing a competence measurement strategy. They pointed out the three theoretical problems of measuring competence: the definition problem, the classification dilemma and the perspective problem. There are various definitions, diverse classification methods, and different

perspectives. Depending on the definitions, classifications, and perspectives on competence, competence measurement methods can be different. Especially, the classification dilemma presents that if competence is too specific about each element of competence, the competence list becomes very long, and if we build the short list of competences, then it becomes rather vague. They reviewed the competence literature from three different perspectives, which are educational perspective, labor market perspective, and human resource management perspectives. They pointed out that there were a number of different ways to look at the concept of competences because competences had been addressed and analyzed in various disciplines. Stressing holistic concept of competence and applying a labor market perspective, they defined competences as 'composites of individual attributes that represent context bound productivity'.

Stoof et al.(2002) presented their view in the contexts of business organizations and educational institutes, explaining business organizations and educational institutes are eager to use the term competence to refer to instruments for human resource development(HRD) and to new educational methods. In order to define competence, they tried to introduce a constructivist approach against an objectivistic point of view. It allows a variety of competence definitions and focuses whether the definition of competence should be adequate for the situation in which it is being used as Fletcher(1997)

noted. They concluded that there were several answers to the question, what is competency, and that a constructed competence definition may need to be changed when the situation changes, that is, when the variables of people, goal, or context change.

〈Table 1〉 shows more examples of the definitions of competence or competency besides those reviewed above. Klemp(1980) & Boyatzis(1982) used the term, job competency, and stressed the underlying characteristics of a person. Spencer & Spencer (1993) added more concepts such as relationships between competency and performance, and specific criterion or standards. Parry(1996), Dewulf(1999), and Bernthal et al.(2004) stressed the integrated meaning of competency. And Parry(1996) pointed out the possibility of improvement of competency by training and development.

〈Table 1〉 Definitions of competence / competency

Author(year)	Definitions
Klemp(1980, as cited in Boyatzis, 1982)	A job competency is an underlying characteristic of a person which results in effective and/or superior performance in a job.
Boyatzis(1982)	A job competency is an underlying characteristic of a person in that it may be a motive, trait, skill, aspect of one's self image or social role, or a body of knowledge which he or she uses.
Spencer & Spencer(1993)	A competency is an underlying characteristic of an individual that is casually related to criterion referenced effective and/or superior performance in a job or situation. Underlying characteristic means the competency is a fairly deep and enduring part of a person's personality and can predict behavior in a wide variety of situations and job tasks. Casually related means that a competency causes or predicts behavior and performance. Criterion referenced means that the competency actually predicts who does something well or poorly, as measured on a specific criterion or standards.

Author(year)	Definitions
Mulder (2000)	Personal competencies: integrated performance oriented capabilities, which consist of clusters of knowledge structures and also cognitive, interactive, affective and where necessary psychomotor capabilities, and attitudes and values, which are conditional for carrying out tasks, solving problems and more generally, effectively functioning in a certain profession, organization, position or role
Van Loo & Semeijn (2001)	Competence [is the] composites of individual attributes that represent context bound productivity.
Parry(1996, as cited in Stoof et al., 2002)	A competency is: a cluster of related knowledge, skills, and attitudes that affects a major part of one's job (a role or responsibility), that correlates with performance on the job, that can be measured against well accepted standards, and that can be improved via training and development.
Mirabile(1997, as cited in Stoof et al., 2002)	Competency is a knowledge, skill, ability, or characteristic associated with high performance on a job, such as problem solving, analytical thinking, or leadership. Some definitions of a competency include motives, beliefs and values.
Dewulf(1999, as cited in Van Loo & Semeijn, 2001)	Competence [is an] integrated knowledge, skills and attitudes that can be used at work to perform, which means producing output in the direction of organizational goals.
Bernthal, et al. (2004)	Competencies are clusters of skills, knowledge, abilities, and behaviors required for job success.

Thirdly, the researcher reviewed the definitions of competence in the respect of practical usage in organizations or professions. As presented in (Table 2), some organizations or professions use usual definitions and others added specific terms of their organizations or professions to the definitions. The definitions for librarianship and extension include excellent, outstanding, or effective performance, and others don't stress these concepts.

〈Table 2〉 Definitions of competence / competency
in organizations or professions

Organizations / Professions	Definitions
National Council of State Boards of Nursing, Inc (1996)	Competence is the application of knowledge and the interpersonal, decision making, and psychomotor skills expected for the nurse's practice role, within the context of public health, welfare and safety.
Texas Cooperative Extension (2003)	Competency is: the application of skills, knowledge and attitudes that lead to outstanding performance in the workplace
Librarianship(n.d.)	[Competency is] the knowledge, skills, and experience necessary to effectively handle professional responsibilities, usually within a specialization, expressed inclusively rather than as a set of minimum standards.
Protected area jobs (Appleton, et al., 2003)	Competence is the ability of the individual within an occupation to carry out a defined task
North Carolina Cooperative Extension (Liles & Mustian, 2004)	Core competencies [are] the broad areas of knowledge, attitudes, and demonstrable skills for achieving excellence in planning, delivering, evaluating, and accounting for extension education programs.

The two terms, competence and competency, were used as the same meaning by some authors, others tried to make the distinction of them clear and use them more intentionally.

Eraut(1994) pointed that we should note a useful distinction in the American literature between the term 'competence', which is given a generic or holistic meaning and refers to a person's overall capacity, and the term 'competency', which referred to specific capabilities. Kaslow et al.(2004) suggested the consistent use of terminology to describe competence and proposed using the term "competence" to describe overall or integrated professional abilities(i.e., the quality of being adequately qualified) and "competencies" to refer to elements

or components of competence (i.e., specific knowledge, skills, and attitudes) in professional psychology. In other words, professional competence refers to an individual's overall capability or demonstrated ability to perform as a professional psychologist, whereas competencies refer to components of performance, such as assessment or intervention.

On the other hand, Fletcher(1997) described the two terms were used interchangeably and generally accepted understanding of these terms is as follows:

Competences: this term usually refers to outcome based occupational competences, such as those developed for National Vocational Qualifications (NVQs) in the UK. They define expectations of performance at work in output terms.

Competencies: this term usually refers to behavioural based descriptors of performance. They describe the inputs which help achieve successful performance at work (Fletcher, 1997, p.10).

He finally concluded that competences are about the work and its achievement and competencies are about the people who do the work. Stoof et al.(2002) who used a boundary approach of competence to define the concept of competence analyzed 'personal versus task characteristics' dimension of competence as follow:

Many authors refer to it under the heading of "the U.S. versus the U.K. approach of competence," although this seems

to be an oversimplification. This dimension is also known as competency versus competence, as competencies versus competences, as input or process versus output, and as behavioral versus vocational competence(Stoof et al., 2002).

Even though they mentioned the oversimplification of the comparison, it showed overall features in the competency or competence field. It shows that U.S mainly used the term 'competency' and focused more on personal characteristics as input of performance, and that U.K mainly used the term 'competence' and focused on more task characteristics as output of performance.

As Rothwell & Lindholm(1999) pointed out the ambiguity of terms and definitions as a challenge faced by competency modelers in the future, the researcher found confusion among the comparison of two terms, competency and competence. Some authors distinguish competence as overall abilities and competency as specific abilities or components of competence, and others regard competence as relating to specific task characteristics and competency as relating to overall personal characteristics.

To sum up, some authors use two terms interchangeably and others try to use them separately even though there is no common understanding yet. Therefore, the researcher chose the term competency for this study, and defined competency as a cluster of related knowledge, skills, and attitudes that

affected a major part of one's role, that correlated with performance on the job, and that could be improved by a training and development.

3. Competency Modeling Methods

There are various methods of developing competency models. Dubois(1993) described three major approaches for identifying competencies and creating competency models: (1) Modified task analysis approach(MTAA), (2) Critical Trait Approach(CTA), and (3) Situational Approach(SA).

The MTAA is the most appealing approach to use for technical and vocational training and education. Task analyst identifies competencies needed in these types of training or education such as cognitive knowledge and skills. This approach can be applied to concrete, less abstract jobs. The CTA supports the building of competency models with identifying the critical traits, behaviors, and other characteristics of employees that distinguish exemplary from average job performer. It emphasizes more the underlying personal traits and characteristics. The Job Competence Assessment Method (JCAM) is a critical trait research process interviewing exemplary and average performers of the job already exists. CTA is especially useful for defining the competencies for professional, managerial, and executive roles in general, jobs of a more

abstract, rather than a concrete, nature. The Situational Approach is a flexible approach used by Patricia McLagan (1990). It is for abstract job than concrete job.

Dubois(1993) also described five methods for building job competency model from the Critical Trait Approach and the Situational Approach. Job Competence Assessment Method, Modified Job Competence Assessment Method, Generic Model Overlay Method, and Customized Generic Model Method are a sort of Critical Trait Approach. Flexible Job Competency Model Method is a kind of the Situational Approach.

Lucia & Lepsinger(1999) listed seven competency modeling methods including above five methods from Dubois(1993) and two methods from Linkage, Inc.(1997). The Job Competency Assessment Method(JCAM) uses interviews and observation of outstanding and average performers to determine the competencies that differentiate between them in critical incidents. The Modified Job Competence Assessment Method also identifies such behavioral differences, but to reduce costs, interviews provide a written account of critical incidents. When using the Generic Model Overlay Method, organizations purchase an off the shelf generic competency model for a specific role of function. With the Customized Generic Model Method, organizations use a tentative list of competencies identified internally to aid in their selection of a generic model and then validate it with the input of outstanding and average performers. The Flexible Job Competency Model

Method seeks to identify the competencies that will be required to perform effectively under different conditions in the future. So it uses a wide variety of comprehensive information sources and future assumptions about the organization and the job. The Systems Method demands reflecting not only on what exemplary performers do now, or what they do overall, but also behaviors that may be in the future. The Accelerated Competency Systems Method places the focus on the competencies that specifically support the production of output, such as an organization's products, services, or information.

Among these seven methods, the Job Competency Assessment Method (JCAM) has been regarded as a basic method from the early days of competency modeling. The staff of David McClelland's consulting firm McBer conducted their competency study in the 1970s and 1980s and evolved a framework for describing the nature and levels of those competencies(Raven, 2001). They developed special methodology, the Behavioral Event Interview, in order to discover differences between persons who have been nominated by knowledgeable judges as outstanding and those who have been nominated as typical.

Behavioral Event Interview is the main feature of the JCAM. Competency model development projects that use JCAM require the completion of these basic steps: (1) research the job components(i.e., job tasks and activities, roles, organization environment and issues) and the requirements for exemplary job performance, (2) research the attributes of the exemplary

performers and construct the job competency model, and (3) validate the job competency model(Dubois, 1993).

Lucia & Lepsinger(1999) established the competency modeling method on the basis of the Job Competency Assessment Method (JCAM) with three main phases: (1) laying the groundwork for competency model project, (2) developing a competency model from scratch, and (3) finalizing and validating competency models. The detailed steps of three phases are as following: (1) determine the objectives and scope of the project, (2) clarify implementation goals and standards, (3) create an action plan, (4) identify individuals who meet, exceed, or fall below established, (5) determine data collection methodology, (6) conduct interviews and focus groups, (7) perform job observations, (8) analyze data and development an interim competency model, (9) Test the competency model, (10) Analyze the new data and refine the model, (11) validate the competency model to determine the correlation of the competencies with those of top performers, and (12) finalize the model.

Lucia & Lepsinger(1999) also provided shortcut methods for some organizations that seek a simpler method while advising the limitations and trade offs of the methods compared to the more rigorous approaches. Starting from scratch, do the following: (1) identify performance criteria for success in the job, (2) interview incumbents and informed observers, (3) develop an interim competency model by analyzing data for themes and patterns, (4) conduct surveys or focus groups to include a

wider population and test their degree of relevance and importance to the job, and (5) finalize the model.

Starting with a validated competency model, conduct a shortcut by doing the following: (1) identify performance criteria for success in the job or role, (2) select a validated competency model from among those available in the marketplace, (3) use a survey or focus group or both to test the degree of relevance and importance to the job in your organization, and (4) finalize the model. The shortcut methods are similar to the Customized Generic Model Method.

The HRD Models(McLagan, 1989) were developed by using the Flexible Job Competency Model Method. Dubois(1993) summarized the advantages of adopting a flexible job modeling approach as following: (1) job competency models that result from the raw materials(e.g., competencies, job outputs, roles, and so forth) are considerably more durable over time than are competency models derived from other methods—an important feature of this method, (2) these competency models are easy to update as the work requirements change, (3) by using a flexible approach, competency models can be determined for jobs that do not yet exist, and (4) competency models constructed in this manner are readily available for doing in depth micro level needs analyses, since they support the use of a variety of individual and group analysis perspectives.

The flexible job competency modeling method needs the following steps: (1) assemble and review all available information

that is pertinent to the job, (2) identify an expert panel consisting of senior organizational leaders, managers, or exemplary subject matter experts, (3) develop present and future assumptions about the job in the context of the organization, (4) develop a job outputs menu, including (optional) quality criteria for each output, (5) construct a job competencies menu and the behavioral indicators for each competency, (6) determine a menu of job roles through a cluster analysis of the job outputs, (7) construct one or more generic job competency models, and (8) brief the client or client group on the project results and prepare the final project products.

Fletcher(1997) provided various tools and techniques for analyzing competence according to three steps of analysis: (1) identifying components, (2) examining relationship between components, and (3) restructuring components(see Table 3). He noted that people need more than one tool because no single tool or technique will cover all three steps. It is important to select tools which will produce the right kind of information. For example, if the intended purpose of a competence framework is for use in training needs analysis, the tools from the 'How can it be learned?' section can be used. If the framework is to be used to improve the job/role/function, people can select from the 'How can it be improved?' section.

<Table 3> Selecting tools and techniques of competence analysis

	Key questions	Possible tools and techniques
Step One Identifying components	What is the job/ role/ function? (you will always need at least one tool from this section)	Functional analysis, Job function technique, Walk and talk technique, Cards sort(dacum) technique, Interview note technique, Daily log technique, Task matrix technique, List expansion technique
Step Two Examining relationships	How is it done?	Process chart, Risk assessment, Man machine chart, Flow chart, Operation chart, Stimulus response, Decision technique, Critical path analysis
Step Three Restructuring components	How can it be improved?	Performance probe, Behaviour counting, Matrix technique, Problem analysis, Repertory grids
	How can it be learned?	Critical incident analysis, Fault tree, Imagination technique, Guided training aid

Rothwell & Lindholm (1999) classified traditional competency modeling methodologies into three approaches: (1) the borrowed approach, (2) the borrowed and tailored approach, and (3) the tailored approach. The borrowed approach to competency modeling is the easiest and least expensive approach. It is also the least rigorous approach. The borrowed and tailored approach uses another organization’s model with tailoring procedure to own organisational culture.

The tailored approach to competency modeling requires the greatest research rigor. It is most useful to ensure legal defensibility when the models are to be used as a basis for making such important employment decisions as selecting, terminating, or promoting. The tailored approach has at least five detailed approaches: (1) the process driven approach, (2) the outputs driven approach, (3) the invented approach, (4) the trends driven approach, and (5) the work responsibilities

driven approach. The process driven approach has been called as the Job Competency Assessment Method and the outputs driven approach has been called as the Flexible Job Competency Model Method or the Situational Approach by Dubois(1993).

The invented approach is that decision makers make it up a competency model through a systematic process. It works best when job incumbents are not the best source of information about the desirable changes. The trends driven approach focuses attention on the future issues or trends affecting the job, work, team or occupation in order to respond to emerging environmental changes. The work responsibilities driven approach derives outputs, competencies, roles, and quality requirements from work responsibilities or activities.

Basic steps in applying the work responsibilities driven approach include the following steps: (1) target one occupational group or job category, (2) select a panel of 8~12 exemplary performers from the group or job category to be examined and 2~3 immediate organisational superiors(also exemplary) of the targeted group to be examined, (3) invite the panel to a session to focus attention on the details and responsibilities of the targeted group or job category, (4) select a group facilitator and 2 assistant facilitators to conduct the session, (5) assemble participants in a large room with a blank wall for 1~2 days, (6) brief participants on the process and on job

challenges facing them in the future, (7) ask participants to list the functions /responsibilities and behaviours they perform, (8) write the statements on sheets of paper and tape the sheets to the wall, (9) continue the process until participants can no longer think of functions /responsibilities or behaviours, (10) create exclusive categories in which to group the functions/responsibilities and behaviours, (11) verify the function/responsibility categories by asking participants to review them, (12) review each function/responsibility and behaviour that participants previously listed to ensure that it is placed under the proper category and to ensure that it should not be revised, deleted(because other function/responsibilities overlap with it), or other functions/responsibilities should be added(because they were initially forgotten), (13) group function/ responsibility categories and behaviours in sequential order, (14) ask participants to verify and /or modify the dequential order, (15) remove the chart from the wall and have it typed, (16) verify the chart devised by the participants by circulating it back to them for review, (17) prepare surveys based on the chart to identify work roles, outputs, competencies, quality requirements, future trends and ethical challenges related to each function/responsibility and/or behaviour appearing on the chart, and (18) conduct the surveys, compile results, and present the results for review to another group of exemplary job incumbents and their immediate supervisors as a form of

validation. Rothwell & Lindholm concluded that no approach to competency assessment is immune to criticism or to limitations and pointed out the limitation of time in real situation.

In extension area, North Carolina Cooperative Extension (NCCE) used a ten step model for identifying, validating, and developing core competencies for extension training and organizational development system as following steps(Liles & Mustian, 2004): (1) conducting an environmental scan and examining internal and external forces impacting extension, (2) collecting data on stakeholder/customer expectations and identifying the expertise(competencies) needed by extension educators for excellence in conducting extension programs, (3) establishing benchmarks for excellence and training and development systems by analyzing state-of-the-art training and development systems in exemplary governmental organizations and the corporate sector, (4) identifying(with extension educators) core competencies which are the broad areas of knowledge, attitudes, and demonstrable skills for achieving excellence in planning, delivering, evaluating, and accounting for extension education programs, (5) validating and refining core competencies by the six groups within extension by using external consultants and by studying the core competencies of peer institutions, (6) developing subcompetencies with three levels of proficiency for each job group within the organization, (7) setting goals and developing action plans for integrating the

core competencies into a sustainable training and development system, (8) using a systems approach to implement organizational structures and a process for sustaining a competency based training and development system, (9) developing and delivering a curriculum for training employees and volunteers in the core competencies, subcompetencies and proficiencies, and (10) obtaining feedback on the effectiveness of a competency based system, adjusting and refining the system as needed.

Marrelli et al.(2005) emphasized that it is important to briefly examine the legal implications in the application of competency models before considering the steps in the competency modeling process. If a model will be used to make employment decisions including hiring, promotion, reassignment, evaluation, compensation, termination, certification, the competency model must be created according to rigorous process and acceptable professional standards. If the competency model will be used for employee development or career planning, less rigor modeling process is required because there is less risk to the organization in these applications.

〈Table 4〉 Competency modeling methods

Title		Target	Tool	Focus
The Modified Task Analysis Approach		Concrete, less abstract jobs	Modified task analysis	Cognitive knowledge and skills
The Critical Trait Approach	The Job Competence Assessment Method (The Process-Driven Approach)	Professional, managerial, and executive roles, Abstract job	Behavioral Event Interviews Observation	Critical traits, behaviors, and other characteristics
	The Modified Job Competence Assessment Method		Interviews	
	The Generic Model Overlay Method (The Borrowed Approach)		An off the shelf generic competency model, From another organisation	
	The Customized Generic Model Method (The Borrowed-and-Tailored Approach)		A generic model+ Validation	
The Situational Approach	The Flexible Job Competency Model Method (The Output-Driven Approach)	Abstract job, Future job	Wide variety of comprehensive information sources, Future assumptions	Work outputs, quality requirements, competencies, and roles
The Invented Approach		Job incumbents are not the best source of information	Systematic process of decision makers	
The Trends-Driven Approach		Changing job		Key trends or changes, what people should know, do to manage those changes
The Work Responsibility-Driven Approach			Group activities of exemplary performers, organisational superiors, group facilitators for 1~2 days	Outputs, competencies, quality requirement from work responsibility

* Dubois (1993), Lucia & Lepsinger (1999), Rothwell & Lindholm (1999)

Various methods used to develop competency model were reviewed in this section and summarized in 〈Table 4〉. The

Critical Trait Approach and the Situational Approach are the classic competency modeling methodologies, and newer approaches have been developed and used. For present jobs, interviews and observations on exemplary performer are main tools to develop a competency model. However, as the characteristics and environment of jobs change rapidly, future-oriented methodologies become more useful. The Situational Approach and the Trends-Driven Approach develop a competency model based on trends or changes or future assumptions. Rothwell and Lindholm (1999) pointed out that as external environmental conditions change with increasing rapidity due to shifting customer preferences and a dynamic global marketplace, the need is intensified to move beyond examinations of exemplary performers under past conditions and a future orientation is needed.

In order to lesson the costs and time for competency modeling, organizations can buy an off-the-shelf generic competency model and borrow the model from another organization. However, Lucia & Lepsinger(1999) emphasized that when we develop competency model or even use the best off-the-shelf “generic” competency model, we need to customize the competency model because certain competencies might be generic across several organizations, but the behaviors relating to those competencies can still vary widely from one company to another. So the Customized Generic Model Method or the Borrowed and Tailored Approach can be used to lesson the disadvantage of the Borrowed Approach or the

Generic Model Overlay Method.

4. Competency based Human Resource Approaches

Interest in competency base approaches is growing (Rothwell & Lindholm, 1999). Training and development professionals are using competency models to clarify organisation-specific competencies to improve human performance and unify individual capabilities with organisational core competencies. Educators and government policymakers are using competency models as one means to clarify and link workplace requirements to educational programmes and curricula.

Competence based human resource management(HRM) is the process of linking competencies to all phases of management of human resources, including selection of employees, work organization and flow, training and development, working conditions, salary and benefits, evaluation, and promotion (Irigoin et al., 2002). Among whole competence based human resources management practice, competence based human resource development(HRD) is a set of systematic and planned activities to develop necessary competency of employees.

A survey of 217 companies by the American Compensation Association, in cooperation with Hay Group, Hewitt Associates LLC, Towers Perrin, and William M. Mercer Inc. found that:

(1) 88% of the companies using competencies for staffing also used competency based interviews for hiring and selection purposes, (2) 62% of the companies using competencies for Training and Development also used training programs specially designed around worker competencies, (3) 90% of the companies using competencies for performance management also used competency based performance appraisal data for employee development, (4) 64% of the companies using competencies as a basis for compensation reported that pay increases were affected most by change/growth in competencies(Stines, 2003).

Competency based approaches have proved to increase the effectiveness of human resource development system and to give several benefits to both organizations and individuals. Competency approaches can solve the problem of lack of agreement on performance expectations, which is the most frequently mentioned problem with traditional HRM systems, by answering two questions(Lucia & Lepsinger, 1999): What skills, knowledge, and characteristics are required to do the job? What behaviours have the most direct impact on performance and success in the job?

Dubois(1993) reported the cases of competency based approaches in companies. Tektronix(Tek), Inc introduced competency based training for manager: the Managers-of-Managers program(MMP). Early in the implementation of the MMP, significant performance improvements were evident in three areas: competence in developing a customer and market

focus, financial competence, and competence in product knowledge. It also had significant organization impacts.

Thompson & Carter(1995) noted the benefits of the U.K occupational standards which is the base of competence based HRD or HRM. The occupational standards for manager brought benefits for both the individual and the organization. Managers are reported to have found the national standards reflective of their management role, enhancing teambuilding objectives. Organizations involved in the programs found that managers made better decisions, maximized staff potential and generally improved the quality of operations.

Lucia & Lepsinger(1999) summarized four primary benefits of a competency based training and development system. Firstly, competency models play an important part in keeping people and organizations focused on the skills, knowledge, and characteristics that affect job performance, and can also help people better assess their current capabilities and determine the behaviors they need to develop for performance improvement. Secondly, a competency model provides focus for training and development opportunities and ensures that they are the ones essential to the success of the organization. A well constructed competency model includes not only behaviors with a strong correlation to effectiveness on the job but also those required to support the organization's strategic direction and to develop and maintain the culture needed to achieve its business objectives. Thirdly, using a competency

model makes the most effective use of training and development. People can receive training and development when they have a use for it. Fourthly, clear and specific competency model provides a framework for bosses and coaches to fulfill their roles to provide ongoing feedback, identify the most useful on the job development opportunities, and to reinforce concepts and techniques learned in training programs.

Shandler(2000) emphasized the importance of competency based learning(CBL) for performance improvement. Competency based learning is a win-win process helping individuals and organizations improve performance. Competency based learning program has been the driver of the strategy for organizational change.

Mulder & Bruin-Mosch(2005) presented new empirical data on the added values of the use of competence instruments in organizations in EU member states. Respondents in 13 EU member states of which the organisations have experience with working with competence instruments, perceived many positive effects on organisational factors, HRM factors, and training and development factors. The factors that respondents perceived considerable effects were five out of the 37 factors including improvement of customer orientation, improvement of quality management, performance improvement of the organization, improving performance of employees, and improving the learning culture in the organisation.

Stone(1997) described three reasons that the Cooperative Extension Service should consider expanding the use of

competencies as a foundation for organizational changes and performance improvement: (1) competency based learning can improve the link between individual performance and organizational performance, (2) competency development is a highly participatory process so that extension professionals have opportunity to identify necessary competency, and (3) competency models are powerful decision making tools for human resource management such as selection, training, professional development, performance appraisal, and succession planning.

Liles & Mustian(2004) advocated that core competency approaches would be equally successful in governmental organizations, and using competency approaches into a training and organizational development system can enhance the capacity of an extension organization to better serves its customers.

The Southern Extension Leadership Development (SELD) program is a competency-based leadership development program for extension directors and administrators. The centerpiece of SELD is the Managerial Assessment of Proficiency (MAP), which is a video-driven, competency-based, computer-scored simulation consisting of 200 items that assesses a participant's proficiency in twelve competencies, two leadership styles, and eight values/drives(Ladewig & Rohs, 2000). Validation studies employing rank order correlation analysis relating performance on the job with performance on MAP showed that correlations between these two measures were high, ranging between .75 to .92.

Even though we found several benefits of competency-based approaches in various fields, there are some criticisms or worries on competency-based approaches. Biemans et al.(2004) described possible pitfalls of competence-based vocational education and training with respect to standardization, determining learning activities, assessment of competencies, competence based management, etc. They emphasized considering actual context of job in order to avoid an over reliance of standardization of competencies, and developing and using valid and reliable competency assessment tools. Competence oriented approaches should proceed to implementation stage of actual learning activities for realizing true innovation in vocational education and training.

5. Conclusion

Competency-based approach has increasingly used in HRM or HRD field and has proved its effects of improving performance of individuals and organizations. Competency-based approaches can help extension organizations to prepare their future in advance, to adapt to changes continuously, and to increase the efficiency of extension service. It can provide a standard for training, development and learning activities for extension professionals clearly and promote continuous learning of extension professionals. The organization

can decide priorities of these activities according to organizational level or roles or gaps between actual and needed competencies. The competency model can be a challenge that facilitates extension professionals to upgrade the level of knowledge, skills and attitude and in turn enhance the standing of the extension profession as high level profession having high standard of performance and competency of members. Following this, extension professionals' job satisfaction or commitment to profession can be improved, finally they can serve client better and client satisfaction can also be increased.

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