

Competency Measurement Model

*Dario RUSSO**

Banca d'Italia, Via Nazionale 91, Roma 00184, Italy; dario.russo@bancaditalia.it

ABSTRACT

In the recent organizational research literature the Competency Mapping is attracting the attention of researchers. Competency mapping is increasingly used in the field of HR development and empowerment: due to the intensive use of technology, knowledge is considered as a key to the achievement of competitive gains, not only in the provision of services, but also in the more traditional sectors of production of goods and industrial products.

In this paper, a model for the Competency Mapping and Measurement is presented. This approach allows information to be obtained about the level of appropriateness of the skills associated with the different processes. These data make it possible, *inter alia*, to analyse the morphology of the business processes, to assess the staff, to better use and distribute the resources over the processes, to promote the mobility of the people across the firm and to optimize training activity and HR management (*resource-based view of the firm* [1]).

() The views expressed here are the sole responsibility of the author and do not necessarily reflect those of the Banca d'Italia.*

Keywords: Business Process Modeling, Complexity, Competency model, Competency Mapping, HR Development.

1. BUSINESS PROCESS

1.1 Definition

Davenport [2] defines a (business) process as:

”a structured, measured set of activities designed to produce a specific output for a particular customer or market. It implies a strong emphasis on how work is done within an organization, in contrast to a product focus’s emphasis on what. A process is thus a specific ordering of work activities across time and space, with a beginning and an end, and clearly defined inputs and outputs: a structure for action. ... Taking a process approach implies adopting the customer’s point of view.

Processes are the structure by which an organization does what is necessary to produce value for its customers.”

1.2 Building a process model

The business processes have to be identified, described and measured. A process description implies identifying objectives, input, output, constraints, rules, technology, risks. Several techniques are available for processes mapping (i.e. Service System Mapping, System Flowcharting, IDEF, Control Flowchart, SPARKS).

The very first stage of the mapping process has to be carried out in a detailed way, in order to catch all the relevant information for process representation and analysis. It is necessary to identify the related activities and tasks for each process. Process maps must show all the interdependencies among processes (i.e. a “process architecture” approach should be followed).

1.3 Process input

For each process the historical series of data on input, output, performance and quality level must be recorded and stored.

The overall work time resulting from the relationship between processes and human resources (as a percentage of the FTE on a yearly basis) is the input of each process (see example in Fig.1).

PROCESS X RESOURCING - YEAR 2012 (*sample*)

| process/employee | Employee1 | Employee1 | Employee1 | Employee1 | Employee1 | INPUT |
|---------------------|-----------|-----------|-----------|-----------|-----------|---------------|
| percentage | 15,12% | 15,34% | 100,00% | 45,76% | 3,54% | |
| employee time | 223 | 245 | 124 | 213 | 222 | |
| Process x work time | 33,72 | 37,58 | 124,00 | 97,47 | 7,86 | 300,63 |

Fig. 1

Determining the FTE percentage associated to the processes may lead to some accuracy errors depending on the frequency of the calculation. The attribution of employee’s time to the pertinent processes is made on a different time basis. At least, yearly the team managers determine the distribution of the team’s FTEs over the processes. Sometimes the allocation of the FTE is made on a monthly basis, rarely a weekly one.

2. COMPETENCY

2.1 Definition

In a business environment, characterized by extended structural dimensions and organizational complexity, it is often very difficult to define and identify the competencies of people involved in business processes. Also, it is complex to express these competencies with a common language.

Each competency must be associable and linkable to specific processes performed by a company and to individuals, who are the owners of these competencies. Competency management¹ has an important impact on improving the overall quality of the final product, and thus on customer satisfaction.

In the literature, several definitions of competency are available.² In the HR-XML Consortium Competencies Schema,[9] a competency is defined as:

A specific, identifiable, definable, and measurable knowledge, skill, ability and/or other deployment-related characteristic (e.g. attitude, behavior, physical ability) which a human resource may possess and which is necessary for, or material to, the performance of an activity within a specific business context.

2.2 Development of competency models

According to Draganidis and Mentzas [7] *“a competency model is a list of competencies which are derived from observing satisfactory or exceptional employee performance for a specific occupation. The model can provide identification of the competencies employees need to develop in order to improve performance in their current job or to prepare for other jobs via promotion or transfer. The model can also be useful in a skill gap analysis, the comparison between available and needed competencies of individuals or organizations. An individual development plan could be developed in order to eliminate the gap. Important variables to be considered during the development of a*

¹ The term competency has become popular with the study of McClelland and his collaborators, especially Richard Boyatzis. In his book “The Competent Manager”, Boyatzis defines a competency as an intrinsic characteristic of an individual randomly related to an effective or high-level performance (e.g. motivations, skills, own image, knowledge) in executing one or more defined tasks. A broad analysis of the competency management concept can be found in Laura Fortunato, Serena Lettera, Mariangela Lazoi, Angelo Corallo and Giovanni Pietro Guidone, A Methodology for Engineering Competencies Definition in the Aerospace Industry [7].

² For a comprehensive review of the different definitions and approaches see Leanne H. Markus, Helena D. Cooper-Thomas and Keith N. Allpress, “Confounded by Competencies? An Evaluation of the Evolution and Use of Competency Models” [6] and Fotis Draganidis and Gregoris Mentzas, “Competency based management: a review of systems and approaches” [8].

competency model are the use of skill dictionaries, or the creation of customized ones and the competency identification and verification methods – surveys, interviews, focus groups, etc.”

Competencies are the building blocks of competency models.

Each competency in the model is defined by means of behavioral descriptors. These descriptors can be defined by determining the highest and lowest levels of proficiency .

A simplified taxonomy derived from the huge literature available on this topic³ groups competencies into three categories:

- a) *Knowledge*. It concerns everything that can be learned from educational/formative systems and training courses and everything which involves cognitive processes (i.e. perception, learning, communication, association and reasoning). It represents the theoretical understanding of something such as a new or updated method or procedure, etc...
- b) *Know-how*. It is related to personal experiences and working conditions. It is learned by doing, by practice, by experience. It is the practical knowledge consisting in “how to get something done”.
- c) *Behavior*. It is referred to individual characters, talents, human traits, or qualities that drive someone to act or react in a certain way under certain circumstances.⁴

Furthermore, an individual has several competencies impacting on organizational activities and patterns of organizational evolution and change [11]. An activity needs specific competencies to be executed and to optimize its performance.

KNOWLEDGE (*examples*)

| |
|---|
| knowledge of IT internal regulations |
| knowledge of security procedure |
| knowledge of training management procedure |
| knowledge of regulations on business travel and assignments |
| knowledge of staff services IT procedure |
| ... |

Fig. 2

³ See Bloom’s taxonomy (1954, [10]).

⁴ Behavioral competencies describe what is required to be successful in an organization outside of a specific job. As such, behavioral competencies are specific to a person rather than to a job. For example, the Team Leader is a person who “effectively manages and guides group efforts; tracks team progress, adequately anticipates roadblocks, and changes course as needed to achieve team goals; provides appropriate feedback concerning group and individual performance, including areas for improvement” [12].

KNOW-HOW (*examples*)

| |
|--|
| know-how of business project management |
| know-how of organizational analysis |
| know-how of English language |
| know-how of application development techniques |
| know-how of website management techniques |
| ... |

Fig. 3

BEHAVIOUR (*examples*)

| Category | Competency | Definition | Demonstrated behavior |
|--------------------------------|----------------------|--|---|
| People management competencies | Building team spirit | Provide team members with the excitement and desire to cooperate with each other, contributing to common goals | <ul style="list-style-type: none"> • Encourage help and respect to other team members • Create a common mission and a feeling of belonging to a team which aims at that |
| | Developing people | Help team members to reach their potential in personal development | <ul style="list-style-type: none"> • Provide mentoring and experience transfer • Provide feedback on strength and weakness of the team members |

Fig. 4

Definition of leadership: *Effectively manages and guides group efforts; tracks team progress, adequately anticipates roadblocks, and changes course as needed to achieve team goals; provides appropriate feedback concerning group and individual performance, including areas for improvement [12].*

The built-up of the model should be made according to the following guidelines.

The behavioral competencies could be included according to the general definition provided by the literature. They don't depend on the nature of the business but are "embedded" in the resources. Several taxonomies of the behavioral competencies are available and could be adopted.

The knowledge competencies are related to the specific business environment. For example, the business processes of an engineering company require technical competencies like the networking theory or the programming languages. The choice of the knowledge competencies to be included into the model is driven by the business sector of the firm.

The know-how competencies are strongly connected to the organization of the firm. They are basically referred to the "rules" (for example, the internal/external regulations) and the procedures (for example, the IT systems).

2.3 The development and the use of the competency model

To build up and to use the competency model⁵ ten sequential steps should be followed.

a. to build up the model:

1. Create the processes list
2. Detect the processes roles
3. Create the matrix process/role vs. required competencies with appropriate rating
4. Integrate the competencies taxonomy including the owned competencies not included in the required competencies set
5. Create the matrix employees vs. owned competencies
6. Create the matrix process/role vs. employees reporting the employees' effort figures
7. Calculate the competency gaps

b. to use the model:

8. Analyze the data
9. Plan the corrective actions
10. Repeat the measurement on regularly basis

3. COMPETENCY MEASUREMENT

3.1 An empiric scale

According to the literature⁶ the 6-level scales are adopted to assess both the Requested and the Owned Competencies.

Eq. (2) $0 \leq C \leq 5$

where

C = Competency level

3.2 The Process Requested Competency

The Required Competency proficiency levels describe the level of a competency required to perform a specific process successfully; these levels relate to the work required for the process. Different

⁵ The model is usually referred to a solar year.

⁶ See [4], [10], [11], [13], [12], [14].

processes require different levels of proficiency for successful performance. Not all processes will require the highest level of proficiency and some may not require certain competencies at all [13].

The analysis needs a high degree of accuracy: the requested skills should be detected for every task of the process. To identify the competencies correctly all the activities of the process must be described with the same level of detail. To obtain a homogeneous and detailed definition of the competencies of each activity, consideration should be given to the output of the activity together with method, technology and product required to perform an activity [7].

COMPETENCY IDENTIFICATION

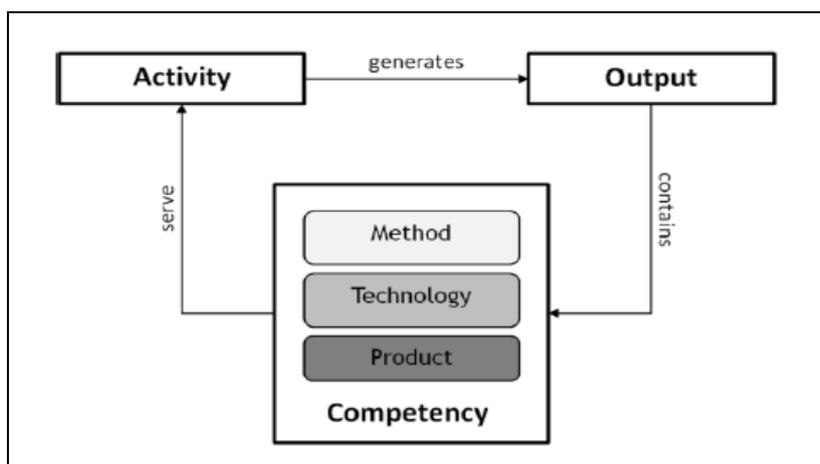


Fig. 5

The following proficiency scale has been adopted to assess the Requested Competencies [12].

PROFICIENCY SCALE

0 - None; 1 - Limited; 2 - Basic; 3 - Proficient; 4 – Advanced; 5 – Expert

| <i>Proficiency Level</i> | <i>Description</i> |
|--------------------------|---|
| 1. Limited | <ul style="list-style-type: none"> • Limited or no use of competency required for the job • Competency has been minimally demonstrated • May have had limited opportunity to apply the competency • May have limited understanding of the competency |
| 2. Basic | <ul style="list-style-type: none"> • Basic understanding or knowledge needed for the job • Basic understanding and knowledge sufficient enough to handle routine tasks • Requires some guidance or supervision when applying the competency • Understands and can discuss terminology and concepts related to the competency |
| 3. Proficient | <ul style="list-style-type: none"> • Detailed knowledge, understanding, and application of the competency Ability to handle non-routine problems and situations • Requires minimal guidance or supervision / works independently • Consistently demonstrates success in the competency • Capable of assisting others in the application of the competency |

| | |
|-------------|---|
| 4. Advanced | <ul style="list-style-type: none"> • Highly developed knowledge, understanding, and application of the competency required to be successful in the job and organization (total mastery) • Can apply knowledge outside the scope of one’s position • Is able to coach or teach others on the competency • Has a long-term perspective • Helps develop materials and resources in the competency |
| 5. Expert | <ul style="list-style-type: none"> • Specialist/Authority level knowledge, understanding, and application of the competency required to be successful in the job. • Recognized by others as an expert in the competency and is sought out by others throughout the organization (expert in the area) • Works across team, department, and organizational functions • Applies skill across multiple projects or functions • Able to explain issues in relation to broader organizational issues • Creates new applications or processes • Has a strategic focus |

Fig. 6

The Process-Requested Competency Set C_r is defined as “the set of the rates of all the competencies requested by a process”

Eq. (4)
$$C_r = f(C_{r(1)}, C_{r(2)}, \dots, C_{r(k)})$$

where:

k = number of competencies requested by the process

example:

| PROCESS REQUESTED COMPETENCY SET | | | | | | | |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| competencies /process | Competency 1 | Competency 2 | Competency 3 | Competency 4 | Competency 5 | Competency 6 | Competency 7 |
| Process x | 3 | 3 | 5 | 4 | 5 | 4 | 4 |

Fig. 7

The set of Process Competencies Requested may change over time, when some factors vary: the technology, the degree of automation, the external context, the relations with other processes, the regulations, etc.

The determination of the Process Requested Competencies Set is affected by some arbitrariness, as a consolidated methodology to determine which level of competency is “the ideal one” for an effective performance of a process is not available. The error introduced by a subjective assessment is significantly reduced if the difference from a year to another is analysed.

Furthermore, the model takes into account the role played by the resources in the process.

PROCESSES AND ROLES

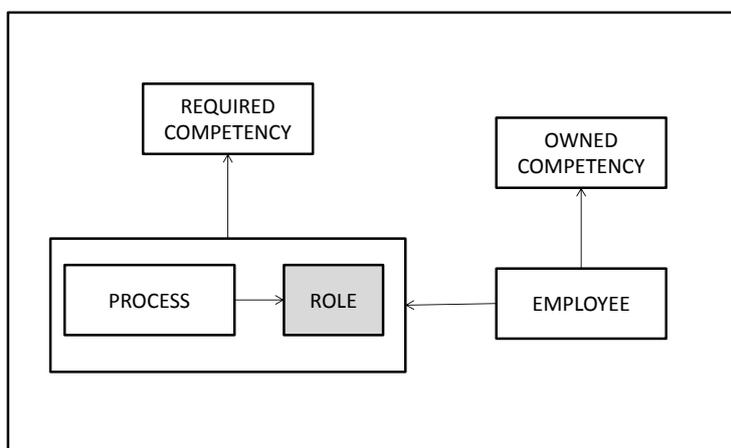


Fig. 8

example:

PROCESS/ROLE REQUESTED COMPETENCY SET

| competencies /process | Competency 1 | Competency 2 | Competency 3 | Competency 4 | Competency 5 | Competency 6 | Competency 7 |
|--------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Process x/ role 1 | 3 | 3 | 5 | 4 | 5 | 4 | 4 |
| Process x/ role 2 | 3 | 2 | 3 | 4 | 5 | 4 | 3 |
| ... | | | | | | | |
| Process x/ role n | 3 | 1 | 4 | 3 | 4 | 0 | 0 |

Fig. 9

For example, in the project management, junior staff usually prepares the project papers and their boss checks the content, the data and the proposals, then he/she makes remarks before the approval. All of them work in the same process, but since they have different roles, the level (and sometimes the type) of requested competencies are different for the different roles (e.g. a higher “knowledge of meetings management” is required for a coordination role). In this paper the “process requested competency” is used instead of “process/role requested competency” to improve its readability.

3.3 Owned Competency

With regards to Owned Competencies, the use of a graduated scale facilitates the identification of the degree of skill or mastery. Adaptation or combination of commonly used scales such as Blooms Taxonomy⁷ and the Bondy rating scale⁸ is frequent. A scale seeks to summarize the differences in the use of time, space, equipment and expenditure of energy across the development continuum.

The 5-level scale defined in the §3.2 is adopted to assess the Owned Competencies.

| |
|---|
| 0 - None; 1 - Limited; 2 - Basic; 3 - Proficient; 4 – Advanced; 5 - Expert |
|---|

The competency assessment process is based on the proficiency level description (see fig. 6). The following scale is used to rate the level of achievement as it occurs in the workplace, classroom or daily life [24].

0 - None: You are aware of information, ideas and situations related to this competency but have not yet had an opportunity to practice it.

1 - Limited: You've just started to find opportunities to work on this competency. You make initial assessments of what is expected of your role. Your understanding of the impact of your actions is limited. Your actions meet some performance expectations but you know that you could improve.

2 - Basic: You've demonstrated this competency and think about how to develop it further. You engage in conversations with others about how you can best contribute and how this competency is important.

3 – Proficient: Your actions usually meet the expectations of yourself and others. You look for opportunities to apply this competency in other areas of your life.

4 - Advanced: You've reached your overall goals and often think about opportunities to use and practice this competency. You consistently meet the expectations of yourself and others. You consider your learning and appreciate the significance of this competency in relationship to your experiences. You demonstrate high quality work that has a positive impact.

⁷ “Bloom’s taxonomy of educational objectives” [14] is a system for categorizing educational objectives according to a hierarchy of behaviors. The concept of taxonomy refers to the nature of the knowledge, skills and attitudes to be learned, in ranked order, with simple behaviors listed first and more complex behaviors listed thereafter.

⁸ Kathleen Bondy [15] captures the essence of Bloom’s affective and psychomotor domains by applying the concept of a hierarchy of increasing competency to the development of a five-point rating scale for the evaluation of nursing students’ clinical performance. Bondy’s rating system was developed to be applied to any professional behavior and is intended to evaluate the amount of supervision required to carry out professional responsibilities.

5 - *Expert: You have an overall mastery of this competency. You understand and demonstrate it in all areas of your life. You are considered to be a role model by others and regularly exceed expectations. Your work is of a very high or exceptional quality and has significant impact.*

A specific scale is adopted to assess the Leadership.

LEADERSHIP PROFICIENCY SCALE

| Unsatisfactory Performer <i>levels 1/2</i> | Successful Performer <i>level 3</i> | Exceptional Performer <i>levels 4/5</i> |
|--|---|---|
| Fails to involve his/her team in defining goals and planning the ways to achieve team success | Involves team members in defining ways to achieve desired results and defining expectations about how team members will work together | Encourages a sense of mutual accountability in team settings that motivates individuals to do his/her best for each other and exceed goals |
| Sets goals for the team but does not adequately communicate those goals to get everyone “on board” | Sets and communicates clear goals for the team up front | Identifies the most important priorities for the team and focuses attention effectively |
| Does not maintain an understanding of where the team is toward reaching its goals; therefore, is unable to provide updates to other stakeholders (e.g., customers, peers, supervisor) when asked | Monitors team performance continuously and provides “real time” project updates to stakeholders (e.g., customers, peers, supervisor) on a regular basis and/or when asked | Provides direction to less experienced team leaders on how to monitor the team without interfering with progress |
| Inconsistently provides feedback to team members; avoids presenting feedback that will not be well-received | Provides meaningful feedback to team members to keep them on track toward common goals | Demonstrates an ability to identify underlying performance issues among team members and deliver highly insightful feedback |
| Provides unbalanced feedback to team members; may present messages that are overly harsh or critical | Provides feedback regarding both strengths and development needs on a regular basis; appropriately balances positive and negative messages | Effectively gives constructive feedback even when the message is extremely difficult to deliver |
| Anticipates only the most obvious potential problems and/or fails to help team members overcome roadblocks as they occur | Uses past experience to anticipate possible problems and coach team members on how to successfully navigate around them | Helps team members develop their ability to anticipate problems by leveraging their past experiences so that they can work more independently |

Fig. 10

3.4 Competency assessment

The competency assessment is the process of comparing an individual’s competencies to those of a competency model.

Assessments are systematic methods of gathering data under standardized conditions and reaching a conclusion regarding the knowledge, qualification and potential of an employee [25].

Competency assessment is an ongoing process of continually building knowledge and skills. Organizations are much more dynamic now and competency assessment addresses the need to stay ahead of the curve.

“In business environments, characterized by extended structural dimensions and by organizational complexity, often it is very difficult to objectively define and identify competencies of people involved in business activities. Also, it is complex to express these competencies with a common language shared by all the companies belonging to the network” [7].

There is a number of different ways of performing competency assessment [22] [23].

The first is the so-called “self-assessment”. Following this methodology, people assess themselves against a pre-determined set of competencies, and using a pre-determined evaluation scale. Often, in the self-assessment methodology the employee is also requested to define a certain number of “areas of strength” and of “areas of weakness“.

Usually this methodology is used by the company in combination with another one (manager’s evaluation and/or structured test and/or assessment center and/or manager’s assessment). The manager of the organisational unit (office, division, and department) assesses all the employees and evaluates their level of competency. The evaluation refers only to the competencies required by the organisational position of the employee and a pre-determined evaluation scale is used. Generally speaking, this methodology is used where the number of employees is not too high and thus it is possible for a manager to have detailed knowledge of the competencies levels of each staff member. This approach has been adopted in the experiment.

Another way to assess the competency is the structured test. This methodology usually refers to assessing recall of facts, concepts, principles, and basic application in a standard examination format. There are three common exam formats: multiple choice questions (MCQs), essay questions, and short-answer questions. Unfortunately such tests are available only for few competencies.

The assessment center methodology is used to evaluate behavioral competences. An assessment center is a series of assessment tests carried out using several techniques like simulation, psychometric test and exercises to take critical decisions like selective or rejecting a candidate for recruitment, promotions, etc.

In order to limit the risks of inaccuracy stemming from the “bias” of the manager/assessor, the proficiency scale described above is integrated by a detailed evaluation scale (see Annex 1). This scale contains more circumstantial definitions. For each competency category (knowledge, know-how, behaviour) a customised definition of each level of the scale is provided.

At the end of the performance year each employee is rated on his/her performance against the relevant competencies.

The set of Owned Competencies C_o encompasses all the competencies owned by the employee

$$\text{Eq. (3)} \quad C_o = f(C_{o(1)}, C_{o(2)}, \dots, C_{o(m)})$$

where:

m = number of competencies owned

example

| OWNED COMPETENCY SET | | | | | | | | | |
|---------------------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|--|--|
| competencies /employee | Competency 1 | Competency 2 | Competency 3 | Competency 4 | Competency 5 | Competency 6 | leadership | | |
| A. Smith | 5 | 3 | 5 | 4 | 1 | 5 | 4 | | |

Fig. 11

3.5 Foreign languages competency

The Common European Framework of Reference for Languages: Learning, Teaching, Assessment, abbreviated as CEFR, is a guideline used to describe achievements of learners of foreign languages across Europe and, increasingly, in other countries⁹. It is adopted in the model. The Common European Framework divides learners into three broad divisions that can be divided into six levels:

A - Basic User

A1 Breakthrough or beginner

A2 Waystage or elementary

⁹ It was put together by the Council of Europe as the main part of the project "Language Learning for European Citizenship" between 1989 and 1996 Its main aim is to provide a method of learning, teaching and assessing which applies to all languages in Europe. In November 2001 a European Union Council Resolution recommended using the CEFR to set up systems of validation of language ability. The six reference levels are becoming widely accepted as the European standard for grading an individual's language proficiency.

B - Independent User

B1 Threshold or intermediate

B2 Vantage or upper intermediate

C - Proficient User

C1 Effective Operational Proficiency or advanced

C2 Mastery or proficiency

The CEFR describes what a learner is supposed to be able to do in reading, listening, speaking and writing at each level [19].

The following table shows the correspondence between the CEFR levels and the 5-level scale.

CEFR LEVELS AND THE 5-LEVEL SCALE.

| <i>CEFR</i> | <i>A1</i> | <i>A2</i> | <i>B1</i> | <i>B2</i> | <i>C1</i> | <i>C2</i> |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| 5-level scale | 1 | 1 | 2 | 3 | 4 | 5 |

Fig. 12

4. COMPETENCY GAP

4.1 Competency Gap

The Competency Gap is the difference between the Requested Competencies and the Owned Competencies

Eq. (5) $G = C_r - C_o$

where:

$$0 \leq G \leq 5$$

Particular cases:

Eq. (6) $G = 0 \rightarrow$ no Gap

Eq. (7) $G > 0 \rightarrow$ owned competencies greater than requested competencies $\rightarrow G = 0$

Example 1

OWNED COMPETENCY LESS THAN REQUESTED COMPETENCY

| Resource: A.W. Smith – Process: x | | | |
|--|-------------------|---------------|----------|
| competency | C_r – requested | C_o - owned | G - Gap |
| Process x | 5 | 4 | 1 |

Fig. 13

Example 2

OWNED COMPETENCY GREATER THAN REQUESTED COMPETENCY

| Resource: A.W. Smith - Process: x | | | |
|--|-------------------|---------------|----------|
| competency | C_r – requested | C_o - owned | G - Gap |
| Process x | 3 | 5 | 0 |

Fig. 14

4.2 Gap calculation

4.2.1 Competency vs. Process Gap [G_{rp}]

The Competencies vs. Process Gap is defined as “the arithmetic mean of the gaps between a person’s Owned Competencies and the Requested Competencies of the process”.

Eq. (8)
$$G_{rp} = \frac{(\sum_{i=1}^n G_{c(i)})}{n}$$

where:

n = number of Requested Competencies

$G_{c(i)}$ = gap between the i^{th} -Requested Competence and the i^{th} -Owned Competence

Eq. (9)
$$G_{c(i)} = C_{r(i)} - C_{o(i)}$$

Consequently:

Eq. (10)
$$C_r(P) = f(C_{r1}, C_{r2}, \dots, C_{rn})$$

A person shows a specific Competency Gap for each process which is involved. As stated before¹⁰, the positive gap must be put equal to 0.

4.2.2 Process Competence Gap [G_c]

The Process Competence Gap is defined as “the weighted average of the Competence vs. Process Gap of all the resources involved in the process”. The weight depends on the work time of each person (on a yearly basis).

$$\text{Eq. (11)} \quad G_c = \frac{\sum(G_r * t)}{\sum t}$$

where:

G_r = competence gap of each resource involved in the process.

t = time worked by each resource in a year.

4.2.3 Process Leadership Gap [G_l]

The Process Leadership Gap is defined as “the difference between 5 and the Managerial Skills (Leadership) rate owned by the Process Leader¹¹”.

$$\text{Eq. (9)} \quad G_l = 5 - L$$

where:

L is the Managerial Skills (Leadership) rate of the Process Leader.

$$\text{Eq. (10)} \quad 0 \leq L \leq 5$$

consequently:

$$\text{Eq. (11)} \quad 0 \leq G_l \leq 5$$

4.2.4 Process Gap [G_p]

The Process Gap is defined as “the arithmetic mean of the Process Competence Gap and the Process Leadership Gap”.

¹⁰ See §4.1, Eq. (7).

¹¹ The process leader is the manager or the professional who has the responsibility of the process management.

Eq. (12)
$$Gp = \frac{Gc + Gl}{2}$$

where:

Eq. (13)
$$0 \leq Gp \leq 5$$

As consequence of the usage of the arithmetic mean in the gap calculation, the same relevance is attributed to all the competencies.

PROBABILITY OF COMPETENCY GAP

| <i>req. level / owned level</i> | <i>0</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> | <i>probability of gap</i> |
|-------------------------------------|----------|----------|----------|----------|----------|----------|---------------------------|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0/6 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1/6 |
| 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2/6 |
| 3 | 3 | 2 | 1 | 0 | 0 | 0 | 3/6 |
| 4 | 4 | 3 | 2 | 1 | 0 | 0 | 4/6 |
| 5 | 5 | 4 | 3 | 2 | 1 | 0 | 5/6 |

Fig. 15

In reality, due to the absence of “positive gap”, the higher the relevance of a competence in a process is, the bigger the probability of having a gap. Apparently the introduction of an additional rate to weight the gaps could increase the accuracy of the model, but it complicates it, in particular for the maintenance. Moreover, as the rating process is totally empiric, the addition of another empiric figure could not reduce the inaccuracy significantly.

PROCESS WEIGHTED REQUESTED COMPETENCY SET

| competencies /process: x | Competency 1 | Competency 2 | Competency 3 | Competency 4 | Competency 5 | Competency 6 | Competency 7 |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| req. level | 3 | 3 | 5 | 4 | 5 | 4 | 4 |
| gap weight | 1 | 2 | 2 | 1 | 3 | 2 | 2 |

Fig. 16

5. USING THE MODEL

5.1 Analysis of the competency map

The competency map could be used to perform some process analysis based on the requested competencies and some staff analysis based on the owned competencies.

a. Process requested competencies

The following table depicts a sample process/role requested competency set.

PROCESS/ROLE REQUESTED COMPETENCY SET

| <i>process/ competencies</i> | Competence 1 | Competence 2 | Competence 3 | Competence 4 | Competence 5 | Competence 6 | Competence 7 | Competence 8 | <i>required main level</i> | <i>no. of required competencies</i> |
|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------------------|-------------------------------------|
| Process 1 Role 1.1 | 5 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 3,333 | 3 |
| Process 1 Role 1.2 | 3 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 3,000 | 3 |
| Process 2 role 2.1 | 4 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1,875 | 8 |
| Process 2 role 2.2 | 2 | 2 | 0 | 3 | 4 | 0 | 1 | 2 | 2,333 | 6 |
| Process 3 role 3.1 | 2 | 2 | 0 | 0 | 0 | 5 | 1 | 1 | 2,200 | 5 |
| Process 3 role 3.2 | 4 | 2 | 0 | 0 | 0 | 1 | 4 | 1 | 2,400 | 5 |
| Process 3 role 3.3 | 4 | 2 | 0 | 0 | 0 | 1 | 2 | 0 | 2,250 | 4 |
| Process 4 role 4.1 | 4 | 1 | 1 | 1 | 0 | 1 | 4 | 1 | 1,857 | 7 |
| Process 4 role 4.2 | 4 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 1,667 | 6 |
| Process 5 role 5.1 | 5 | 4 | 1 | 0 | 0 | 0 | 1 | 1 | 2,400 | 5 |
| Process 6 role 6.1 | 2 | 2 | 0 | 0 | 0 | 5 | 1 | 1 | 2,200 | 5 |
| Process 6 role 6.2 | 4 | 2 | 0 | 0 | 0 | 1 | 4 | 1 | 2,400 | 5 |
| Process 6 role 6.3 | 4 | 2 | 0 | 0 | 0 | 1 | 2 | 0 | 2,250 | 4 |
| <i>n° of involved processes</i> | 13 | 13 | 6 | 4 | 2 | 9 | 11 | 8 | | |

Fig. 17

Plotting in an x-y chart the sample, “generalist” and “specialised” processes can be distinguished. The first require a high number of competencies at a low level of proficiency. The latter require, on the contrary, fewer competencies with high skills.

PROCESS CLUSTERING BY REQUESTED COMPETENCY

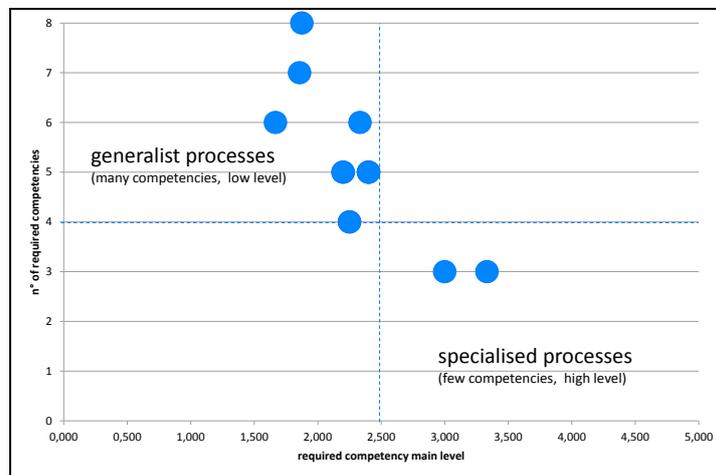


Fig. 18

In a hyper-regulated environment a proliferation of specialised processes is frequently detected; in fact, the execution of the process activity is fully driven by the rules and the know-how of the regulation is the only competence required.

Another use of the competence map is the detection of the “key competencies”. A key competence can be spread over more than half processes. Detecting the key competence is very relevant to address the recruitment policy and the training program of the staff.

KEY COMPETENCIES

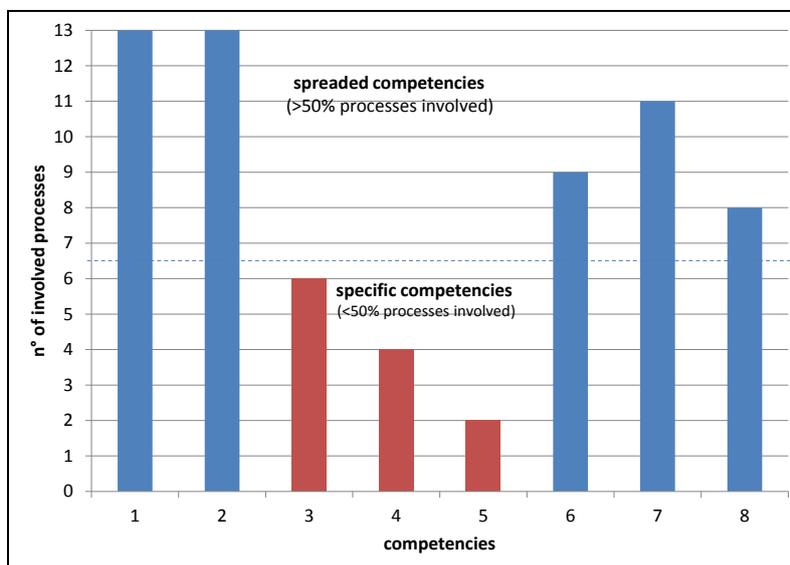


Fig. 19

b. Owned competencies

The following table depicts a sample resource owned competency set.

OWNED COMPETENCY SET

| employee/ competency | Competence 1 | Competence 2 | Competence 3 | Competence 4 | Competence 5 | Competence 6 | Competence 7 | Competence 8 | main level of owned competencies | no. of owned competencies |
|-------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--|------------------------------|
| Employee 1 | 5 | 5 | 0 | 0 | 1 | 1 | 1 | 0 | 2,600 | 5 |
| Employee 2 | 3 | 1 | 5 | 0 | 0 | 0 | 2 | 0 | 2,750 | 4 |
| Employee 3 | 2 | 2 | 1 | 4 | 1 | 1 | 2 | 1 | 1,750 | 8 |
| Employee 4 | 3 | 2 | 0 | 3 | 2 | 0 | 2 | 2 | 2,333 | 6 |
| Employee 5 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1,333 | 3 |
| Employee 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1,500 | 2 |
| Employee 7 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1,333 | 3 |
| Employee 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1,000 | 2 |
| Employee 9 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1,000 | 3 |
| Employee 10 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1,333 | 3 |
| Employee 11 | 0 | 2 | 0 | 0 | 1 | 3 | 1 | 0 | 1,750 | 4 |
| Employee 12 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1,000 | 2 |
| Employee 13 | 3 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1,500 | 4 |

Fig. 20

The plot of the data in an x-y chart shows two main categories: flexible and specialist resources, depending on the number of owned competencies (more or less than half of the total).

RESOURCES CLUSTERING BY OWNED COMPETENCY

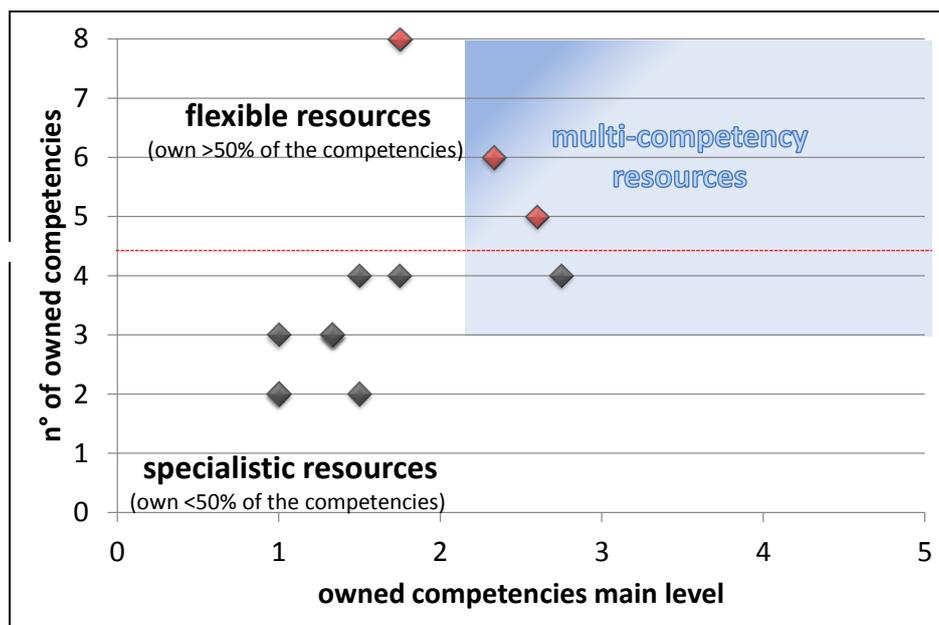


Fig. 21

Among flexible resources, the “multi-competency resources” can be highlighted. These resources are highly skilled in many competencies and consequently they are proficient in several processes.

The availability of a large number of multi-competence resources (MCR) makes possible to manage the work-load peaks effectively: the MCR can be temporarily moved from a process to another without any training .

5.2 Analysis of the gaps

The main usage of the competency gap evidence is to design the training patterns of the staff. According to the characteristic and to the potential of the people, specific training sessions can be planned and realised in a multi-year perspective.

The gap analysis provides robust guidance to optimize the allocation of the resources and the management of the turn-over (including the recruitment policy).

The analysis of the gap could also address the redesign of the processes, with the aim to reshape the required competency set (for example dropping the regulations requiring high-level knowledge of complicate and redundant controls).

The gap must be measured in the time.

It is interesting to compare the variation from one year to the other as a feedback of the training activities and of the other organisational actions.

The relationship between the knowledge gap and the process productivity is an item that could be investigated by experimental studies. Intuition suggests that the bigger the gap, the worse the performance, but there is no strong statistical evidence of this at the moment.

6. CONCLUSIONS

Combining the relationship between staff and processes (“who does what”), the relationship between processes and skills (“what the staff should know to be able to work on a process”), and the relationship between staff and competencies owned (“what the staff currently knows”), it is possible to conduct an analysis of competencies, determining the gap between the desirable level of skills requested by the process and the current level of skills owned by the staff involved in the process.

The assessments obtained allow to perform analysis such as [7]:

- identifying the gap between the competencies needed by activities and competencies possessed by personnel and corporate entities;
- placing all available resources in the right roles with positive organizational effects;
- identifying critical resources that need training and/or improvement actions to develop their potential;
- assessing the change impact of movements of certain individuals in other companies or areas.

In addition, Sparrow [17] has observed that the competency literature includes a huge range of claimed benefits specific to HR processes in organizations. In summary, these are:

- improved recruitment and selection practices through a focus on required competency;
- improved individual, organizational and career development programs;
- improved performance management processes due to improved assessment;
- improved communication on strategic and HR issues through a common language.

Finally, having a competency framework, and assessments based on it, provides a comprehensive picture of the organization skill map, its development needs, and potential leaders and thus the approach to effective talent management could be defined. The employees get a better understanding of their potential career progression, reinforcing their commitment to the organization even further.

ACKNOWLEDGEMENTS

The author wishes to thank Hans-Gert Penzel (Universität Regensburg GmbH), Fabrizio Balassone and Paolo Angelini (Economic Research Department of Bank of Italy) for their valuable comments and suggestions.

REFERENCES

- [1] Collins J., Montgomery C. (1995), *Competing on Resources: Strategy in the 1990s*. Harvard Business Review, July – August.
- [2] Davenport T. (1993), *Process Innovation: Reengineering work through information technology*. Harvard Business School Press, Boston.
- [3] Rummler and Brache (1995), *Improving Performance: How to manage the white space on the organizational chart*. Jossey-Bass, San Francisco.
- [4] Johansson et al. (1993), *Business Process Reengineering*, Wiley & Sons,.
- [5] The *Government Performance and Results Act (GPRA)* (P.L. 103-62).
- [6] Markus L.H., Cooper-Thomas H.D. and Keith N. Allpress (2005), *Confounded by Competencies? An Evaluation of the Evolution and Use of Competency Models*, New Zealand Journal of Psychology Vol. 34, No. 2, July 2005.
- [7] Fortunato L., Lettera S., Lazoi M., Corallo A. and Guidone G.P., *A Methodology for Engineering Competencies Definition in the Aerospace Industry*, [www.iiisci.org/journal/CV\\$/sci/.../CN11002.pdf](http://www.iiisci.org/journal/CV$/sci/.../CN11002.pdf)
- [8] Draganidis F. and Mentzas G. (2006), *Competency based management: a review of systems and approaches*, Information Management & Computer Security Vol. 14 No. 1, Emerald Group Publishing Limited 0968-5227 DOI 10.1108/09685220610648373.
- [9] HR-XML Consortium Competencies Schema <http://www.hr-xml.org/>
- [10] Medved M.B., *Designing Competency Based Training with Bloom's Taxonomy*, mbmtraining@yahoo.com, <http://mbmtraining.com> Learning in the News <http://mbmtraining.wordpress.com/>
- [11] Grandori A. (1999), *Organizzazione e Comportamento Economico*, Il Mulino, Bologna,.
- [12] Hecht J. (2008), *Georgia's Behavioral Competency Framework SPA 2008 HR Projects Coordinator State Personnel Administration 404-463-3534*.
- [13] Janas S. (2008), *Choosing the Right Method to Assess and Rate Competencies in Your Organization*, Aug 27th 2008, Competency Management

- [14] *Assessment Fact Sheet: Performance Assessment using Competency Assessment Tools*
www.edcan.org/pdf/EdCanFactSheetCAT.pdf
- [15] Bondy K. N. (1983), *Criterion-referenced definitions for rating scales in clinical evaluation*. *J Nurs Educ*, 22(9).
- [16] *GROUP ONE COMPETENCIES BEHAVIORALLY ANCHORED - RATING SCALES* - State of Michigan, www.michigan.gov/.../G4comp_14627_7.PDF
- [17] Sparrow P. (1995), *Organisational Competencies: A Valid Approach for the Future?* *International Journal of Selection and Assessment* 3.3.
- [18] Boyatzis R. (1982), *The Competent Manager: A model for Effective Performance*, ed. N.Y.J.W. Sons.,.
- [19] Organ D.W. (1988), *Organizational Citizenship Behavior: The good soldier syndrome*. New York Lexington Books,.
- [20] Hamel G. and Prahalad C. K. (1989). *Strategic Intent*. *Harvard Business Review*.
- [21] Wikipedia, <http://en.wikipedia.org>
- [22] *Methods of Competency Assessment*,
http://www.lancastergeneralcollege.edu/content/upload/AssetMgmt/images/College/IPD_Methods_of_Competency_Assessment.pdf
- [23] Bashook P.G. (2005), *Best practices for assessing competence and performance of the behavioral health workforce*, *Administration and Policy in Mental Health*, Vol. 32, Nos. 5/6, May/July 2005 DOI: 10.1007/s10488-005-3265-z
- [24] University of Victoria, *How to assess your competencies*, Information sheet, www.uvic.ca/coopandcareer
- [25] Management Study Guide, *Competency based assessment*, <http://www.managementstudyguide.com/what-is-assessment.htm>

ANNEX – COMPETENCE ASSESSMENT SCALE

| RANK | RANK GENERAL DESCRIPTION a. processes b. resources |
|-------------|--|
| 0 | a. the process does not require this competence b. the employee does not have this expertise |
| 1 | a. the process requires a very superficial level of expertise, no direct experience is required (just a theoretical basic knowledge is enough). b. the employee has this expertise at a very superficial level, he/she knows that this expertise exists and is able to describe it due to an educational or a theoretical knowledge at an elementary level. |
| 2 | a. the process requires this expertise at a basic level; it is necessary to have a direct experience of this expertise it (although for a limited time) or to know its basic elements (e.g. at least a basic technique of a method, the fundamental functioning of a software tool or the essential requirements of a rule or a standard) b. the employee owns and masters the basic elements of the skill; he/she has a direct experience of this expertise (although limited in time); he/she is able to fully describe it, to hold a conversation on it, to teach the basic elements to other resources, to propose simple innovations (especially for rules and tools) |
| 3 | a. the process requires this expertise at an intermediate level; it is necessary to have at least 1 year experience of it and all the necessary elements to be applied to the main cases (e.g. basic technique of a method, functionality of a software tool, requirements of a rule) b. the employee owns and masters all the basic elements of the competence having applied them for a period of at least 1 year; he/she is able to describe it adequately, to speak about it with an expert, to train other resources, to propose innovations (especially for rules and tools). |
| 4 | a. the process requires this skill at an advanced level; it is necessary to have a significant experience of this expertise (at least 3 years) and to know all the relevant elements to be applied to complex cases (e.g. basic technique of a method, functionality of a software tool, requirements of a rule) b. the employee owns and masters all the basic elements of the skill having applied them during his/her professional life for a period of at least 3 years even in complex environments, he/she is able to describe it in detail, to speak about it with an expert, to manage a training process, to propose innovations (especially for rules and tools). |
| 5 | a. the process requires this skill at a very advanced level; it is necessary to have a deep knowledge and long experience (at least 5 years), to know all the elements to be applied in very varied and complex situations on a continuous basis. b. the employee owns and masters all the basic elements of the skill; he/she has a deep knowledge and a long experience (at least 5 years); he/she is able to describe it in detail, to speak about it with an expert, to manage a training process, to propose new solutions (especially for rules and instruments). |

| RANK | BEHAVIOUR Example: negotiation and interpersonal relations skills |
|------|--|
| 0 | a. the process does not require this competence b. the employee does not have this expertise |
| 1 | a. the process requires a very superficial level of expertise, no direct experience is required (a theoretical basic knowledge is just enough). b. the employee has this expertise at a very superficial level, he/she knows that this expertise exists and is able to describe it due to an educational or a theoretical knowledge at an elementary level. |
| 2 | a. the process requires this attitude at a basic level; it is necessary to have a direct experience (although for a limited time) or to know the basic elements (e.g. at least a basic negotiation technique) b. the employee owns and masters the basic elements of the skill (e.g. knows at least one negotiation technique), has a direct experience of it (although for a limited time, for example, having been part of a working group); he/she is able to describe it, to speak about it, to teach the basic elements to other resources |
| 3 | a. the process requires this attitude at an intermediate level; it is necessary to have at least 1 year experience (e.g. having been part of a working group) and to know all the elements to be applied to the main cases that arise in the execution of the process (e.g. basic negotiation techniques and instruments). b. the employee owns and masters the basic elements of the skill having applied them for a period of at least 1 year; he/she is able to describe it adequately, to speak about it with an expert, to train other resources, to propose new rules |
| 4 | a. the process requires this skill at an advanced level; it is necessary to have a significant experience (at least 3 years) and to know the elements to be applied (e.g. negotiation techniques and instruments) also to complex cases (e.g. international working groups) b. the employee owns and masters the basic elements of the expertise having applied them during his/her professional life for a period of at least 3 years even in complex environments; he/she is able to describe it in detail, to speak about it with an expert, to manage a training process, to propose new and original improvements. |
| 5 | a. the process requires this skill at a very advanced level; it is necessary to have a deep knowledge and a long experience (at least 5 years) and to know all the elements to be applied in very varied and complex situations on a continuous basis. b. the employee owns and masters all the basic elements of the skill; he/she has a deep knowledge and a long experience (at least 5 years); he/she is able to describe it in detail, to speak about it with an expert, to manage a training process, to propose innovations. |

| RANK | KNOW-HOW Example – organizational analysis |
|-------------|---|
| 0 | a. the process does not require this general knowledge. b. the employee does not have this general knowledge. |
| 1 | a. the process requires a very superficial general knowledge; no direct experience is required (an elementary theoretical level is enough). b. the employee has this general knowledge at a very low level; he/she is able to describe it due to an educational or theoretical knowledge at an elementary level. |
| 2 | a. the process requires this expertise at a basic level; it is necessary to have a direct although short experience, and also to know the basic elements of this expertise (e.g. a high educational knowledge). b. the employee has and masters the basic elements of the general knowledge; he/she has had direct although short experience, is able to describe it completely, to speak about it, to teach the basic knowledge to other employees, to propose new and easiest ways of application. |
| 3 | a. the process requires this general knowledge at an intermediate level; it is necessary to have at least 1 year experience and to know all the necessary elements to be applied to the main cases (a university degree knowledge). b. the employee has and masters all the basic elements of the general knowledge, having applied them during his/her professional life for a period of at least 1 year; he/she is able to describe it adequately, to speak about it with an expert, to teach it to other employees, to propose possible innovations. |
| 4 | a. the process requires this general knowledge at an advanced level; the employee must have almost a 3 years' experience and know all the elements (at least a post degree knowledge) in order to apply them also to more complex cases. b. the employee has and masters all the basic elements of the general knowledge having deepen it during his studies (post degree courses and equivalent ones) or having applied it during his/her professional life for a period of at least 3 years also in complex cases; he/she is able to describe it in a very detailed manner, to hold a conversation on it with an expert, to manage a teaching program, to propose innovations. |
| 5 | a. the process requires this general knowledge at a very advanced level; this knowledge must be deep and for at least 5 years and all the elements must be known (e.g. master) in order to apply them continuously in very varied and complex situations. b. the employee has and masters all the basic elements of the general knowledge having had a deep and long experience (at least 5 years) also during his/her career (e.g. master); he/she is able to describe it in a very detailed manner, to hold a conversation on it with an expert, to manage a teaching program, to propose innovations (especially for rules and instruments). |

| RANK | KNOWLEDGE Example – company regulations on business travel and assignments |
|-------------|---|
| 0 | a. the process does not require the knowledge of this rule. b. the employee does not know this rule. |
| 1 | a. the process requires the knowledge of specific rules at a very superficial level, no direct experience is required (e.g. it is important to know that a specific rule is the correct reference for mission expenses settlement) b. the employee has the knowledge of the specific rule at a very superficial level, he/she knows the rule exists and is able to describe the exact application cases (see previous example) |
| 2 | a. the process requires the knowledge of the rule at a basic level; it is necessary to have a direct although short experience, to know the main elements (e.g. the main provisions of the company rule with reference to travel allowances). b. the employee has and masters the basic elements of the specific rule; he/she has a direct although short experience, is able to describe it completely, to speak about it, to teach the basic elements to other employees, to propose simple evolution lines. |
| 3 | a. the process requires the knowledge of the specific rule at an intermediate level; it is necessary to have at least 1 year experience in a role providing the direct application of the rule – e.g. in the mission settlement office for the specific rule – and to know all the elements (e.g. the most common application cases). b. the employee has and masters the knowledge of all the basic elements of the specific rule having directly applied them during his/her professional life for a period of at least 1 year. He/she is able to describe it adequately, to have a conversation on it, even with an expert (e.g. the Department issuing the rule), to teach it to other employees, to propose possible evolution lines. |
| 4 | a. the process requires the knowledge of the specific rule at an advanced level; this knowledge must be due to a working experience (at least 3 years) and all relevant elements must be known in order to apply them also to complex cases b. the employee has and masters all the basic elements of the specific rule having applied them during his/her professional life for a period of at least 3 years even in more complex cases; he/she is able to describe it in detail, to speak about it with an expert (e.g. of the Department issuing the rule), to manage a teaching program, to propose possible innovations. |
| 5 | a. the process requires the knowledge of the specific rule at a very advanced level; this knowledge must be deep and long for at least 5 years and all the elements must be known in order to apply them continuously in very varied and complex situations. b. the employee has and masters all the basic elements of the specific rule having had a deep and long work experience (at least 5 years); he/she is able to describe it in a very detailed manner, to hold a conversation on it with an expert (e.g. of the Department issuing the rule), to manage a teaching program, to propose possible innovations (especially for rules and instruments) |

| RANK | KNOWLEDGE Example - staff services IT procedure |
|-------------|---|
| 0 | a. the process does not require the knowledge of this SW procedure. b. the employee does not know this SW procedure. |
| 1 | a. the process requires the knowledge of the specific SW procedure at a very basic level, no direct experience is required (a theoretical elementary knowledge is enough, e.g. as user of the procedure). b. the employee knows the specific sw procedure at a very superficial level, he/she knows that it exists and is able to describe it due to a basic educational or theoretical learning (direct use of a procedure as user). |
| 2 | a. the process requires a basic knowledge of the specific sw procedure; it is necessary to have a direct working experience of it (although for a short period) and know all the main elements (e.g. basic operations to be put in place by a secretarial area). b. the employee has and masters the basic elements of the specific sw procedure; he/she has a direct experience of this procedure, even if for a short period, he/she is able to describe it completely, to have a conversation on it, to teach the basic elements of the specific procedure, to propose possible evolution lines. |
| 3 | a. the process requires the knowledge of a specific SW procedure at an intermediate level; it is necessary to have a direct working experience (1 year e.g. in specialized offices using the procedure) and to know all the elements in order to apply them to the main cases. b. the employee has and masters all the basic elements of a specific sw procedure having applied it for at least 1 year during his/her professional life (e.g. in a secretarial area), he/she is able to describe it adequately, to speak about it with an expert (e.g. a member of the competent Department), to teach it to other employees, to propose possible evolution lines. |
| 4 | a. the process requires the knowledge of the specific sw procedure at an advanced level, it is necessary to have a direct working experience (3 years) and to know all the elements in order to apply them even to the more complex cases. b. the employee has and masters all the basic elements of the specific procedure having used it during his/her professional life for at least 3 years (as indicated above), he/she is able to describe it in detail, to hold a conversation with an expert, to manage a teaching process, to propose possible improvements. |
| 5 | a. the process requires the knowledge of the specific sw procedure at a very advanced level; it is necessary to have a deep and long direct experience (5 years) and to know all the elements to be used on a continuous basis in very varied and complex situations. b. the employee has and masters all the basic elements of the sw procedure, has a long and deep direct experience (5 years), he/she is able to describe it in detail, to hold a conversation with an expert, to arrange a teaching program, to propose possible improvements. |