EXPERTISE, A NEW APPROACH IN HUMAN RESOURCE MANAGEMENT

Eva Boštjančič 1, Mark Bračič 2, Nina Ivančič 3

1 University of Ljubljana, Faculty of Arts, Slovenia
eva.bostjancic@ff.uni-lj.si
2 University of Ljubljana, Faculty of Arts, Slovenia
mark.bracic@gmail.com
3 University of Ljubljana, Faculty of Arts, Slovenia
ivancicina@gmail.com

Abstract: The aim of this article is to empirically clarify expertise and highlight its importance for organization’s human resource management. We translated and adapted two different questionnaires and applied them on a Slovene sample (N = 154, aged 23 – 64); a self-assessment Expertise Questionnaire (α = .83) that was used by Mieg (2009), and General Expertise Measure (α = .89), constructed by Germain and Tejeda (2012). The latter has been filled out by a co-worker, who assessed what kind of an expert his or her colleague is. Using factor analysis we verified the structure of expertise and confirmed Mieg’s results: expertise is constructed by excellence, defined by years of practice, someone being among the top 10 % in a given domain and being referred to as an ‘old hand’ in a field of work, and professionalism which is shown as professional engagement. To some extent we also confirmed Germain and Tejeda’s objective and subjective expertise. Using both questionnaires we gathered a wide range of information that can be used for defining expert’s key competences, work-related and also personality-based features. We emphasized the importance of recognizing experts and making practical implications why and how an organization could manage human resources to enhance organizational success rate together with employee’s professional development.

Keywords: expertise, key competences, questionnaire, human resource management

1 INTRODUCTION

There is an overwhelming volume of expertise research, because the concept again and again proves itself as a very important source of interpersonal differences on the field of organizational psychology and elsewhere. Van der Heijden (2002) on the other hand claims research on professional expertise is still in its beginnings. Theories and studies from the last two decades are relatively restricted and discipline-specific (Ericsson, 1996; Ericsson and Smith, 1991), so there is a lack of more fundamental insights into the concept in general. Ericsson and Smith (1991) defined expert performance as consistently superior performance on a specified set of representative tasks for the domain that can be administrated to any subject. The goal of many studies on expertise was directed into defining domain specific representative tasks that would evaluate performance of individuals within one specific domain. Van der Heijden (2002) was the
pioneer of domain-independent operationalization of expertise. One of the aims of this study is to continue the search of an instrument that could identify general features of expertise and so be applicable in many different domains.

Torraco and Swanson (1995) find organizational success dependent on an organization’s ability to use employees’ expertise as a factor in the shaping of its business strategy. In other words, organizational success rate depends on the ability to develop and manage human resources – its knowledge, competence and experience. That is precisely why it is important that we understand how expertise is acquired, how it can be taught, and how new employees can be presented with appropriate management activities (van der Heijden, 2002). By recognizing exceptional individuals early enough we can and treat them accordingly in the future.

In Slovenia expertise as a psychological construct is a novelty, so we lack appropriate instruments to identify experts. In this article we will present a self-assessment questionnaire used by Mieg (2009) and a “colleague-based assessment” questionnaire by Germain and Tejeda (2012) as two types of domain-independent questionnaires for the identification of organization’s key personnel. Our intention is to present and describe a relatively new and little researched construct. We want to show what advantages it brings in the area of human resources, especially in domains with no objective indicators of success, or where it is hard to numerically point out when and why an individual is successful at his or her work.

1.1 HISTORY OF RESEARCH ON EXPERTISE

Pioneer research comparing the performance of experts and novices was started by de Groot (1946/1978), and Chase and Simon (1973). Later progress in understanding the exceptional performance hardly influenced general theories in psychology. New knowledge did not live up to the humanistic goals of gaining insights from the lives of exceptional people about how people might improve their lives. A lack of influence of scientific findings is a consequence of two dominant researching approaches to exceptional performance and their aims (Ericsson & Charness, 1994). The human information-processing approach shaped by Newell and Simon (1972) has attempted to explain exceptional performance in terms of knowledge and skills acquired through experience, but with no regard to interpersonal differences. The other major approach, by Howard Gardner (1983), focused on individual differences in exceptional performance that would allow them to succeed in a certain domain. He claimed exceptional performance results from a close match between someone’s intelligence profile and demands of particular domain. Findings within this approach, though have limited implications for the lives of the majority of children and adults of average ability and talents.

After 15 years of rightsizing, downsizing, reorganization and other perceived methods of attaining profitability, organizations are now starting to realize that the operating expense most easily reduced – their workforce – is also their strongest source of reaching and maintaining long-term profitability and growth (Swanson & Holton, 2001). Studies in expertise now follow a differential approach that distinguishes between experts and novices of the same domain on one side and to people outside that domain on the other. Besides that, researches describe an
The evolution of expertise in different domains and are at the same time searching for patterns of development and learning that could be generalized to all fields of work (Mieg, 2009).

Research so far, relating to expertise in workplace, has revealed the following characteristics:

1. **Reliably superior performance**: expertise reveals itself with reliably superior performance in representative tasks (Ericsson, 1998);
2. **Deliberate practice**: to achieve a high level of expertise extended engagement in domain related activities is necessary. Specific training is always pointed towards an improvement of certain achievements inside a domain. It includes suitable training tasks, concentration, and self-regulated learning (Ericsson, 2006). To achieve difficult, long-term goals, one requires talent and grid, that is, “sustained and focused application of talent over time”. (Duckworth, Peterson, Matthews, & Kelly, 2007, p. 1087);
3. **Cognitive adaptation**: refers to an adaptation of expert skills to a specific work environment (Mieg, 2009). Experts understand particular cases as a part of their structured knowledge base, which helps them focus on relevant aspects of a problem (Feltovich, Prietula, & Ericsson, 2006);
4. **Domain specificity**: superior skills achieved in one domain cannot be transferred to another domain (Ericsson & Charness, 1994; Mieg, 2009);
5. **The ten-year rule**: it takes time to become an expert in a certain domain. Chase and Simon (1973) have concluded that a chess player must invest approximately 10,000–50,000 hours of studying chess in order to reach a master level. Ericsson, Krampe and Tesch-Römer (1993) found similar evidence in many other domains, including sports, music, science, games and specialized professional tasks (e.g. medical diagnosis with X-rays).

### 1.2 DEFINING EXPERTISE

**Expertise** is defined as domain specific knowledge, experience and problem solving in the form of consistently demonstrated actions that are both optimally efficient in their execution and effective their results (Swanson & Holton, 2001). Experts possess a cluster of related factual knowledge, skills, experiences, attitudes, and value judgment directly related to their job; however they also have to have the capacity to act in a wide range of situations (Herling & Provo, 2000). Ericsson (1996) puts above-averageness of results as a key trait of expertise. For a person to be considered an expert, they have to be among top ten percent of people in a certain professional field.

Presence of experts is necessary mostly where there are no right answers (Shanteau, 1992). Even when standards do exist, it is experts who establish these standards and have the power to change them. Ericsson (2006) claims that this is exactly why they can be called *experts*. They are those who are nearly always best qualified to evaluate their own performance and explain any possible deviant outcomes.

In formalization of a domain, engagement is an important driver, particularly through the definition of professional standards and performance criteria (Mieg, 2008). It can consist of
writing significant textbooks, establishing professional methods, founding or managing professional associations or professional schools, or exhibiting best professional practice. Another important aspect of expertise is motivation for developing excellence, both inside the domain, and excellence of the domain itself. Friedson (2001) names this kind of expertise professionalism. We are talking about individuals with high degree of initiative and who are willing to invest time and money, sometimes even holidays, to participate in career activities (van der Heijden, 2002).

In addition to the concept of general expertise, Sternberg (1999) introduced developing expertise, which is defined as the ongoing process of acquiring necessary skills to perform masterly in a given domain. He furthered the understanding of developing expertise by connecting the concept with intelligence testing and by showing that intelligence actually represents a measure of developing expertise. In Sternberg’s model of developing expertise, the novice invests his or her abilities to perceive expertise in a given domain and thus enhances his or her specific intelligence. According to Sternberg in the pursuit of achieving expertise one must view intelligence as a set of different abilities that develop according to the field of expertise. Although there surely is a connection between intelligence and expertise, being an expert does not require exceptional achievements on intelligence tests, neither genius-like abilities.

1.2.1 Specifics and components of expertise

Sternberg and Frensch (1992) define two aspects of expertise – a cognitive aspect and an attributional one. Experts perform difficult things almost automatically, tasks that nonexperts cannot perform at all or only with great effort. The aspect of attribution refers to the fact that in ‘real world’, as opposed to the psychological laboratories, expertise is, in large, an attribution. A person is an expert because she is regarded as such by others.

The distinction of excellence and professionalism, the two concepts of expertise, is necessary to understand expertise from a psychological point of view in those domains without reliably superior performance such as stock broking, student selection, or psychotherapy (Shanteau, 1992). Ericsson (2006) defines excellence through individual performance in a domain, whereas professionalism as performance of that domain. Mieg (2009) discovered that years of practice and domain of work are connected to excellence – or, as Amirault and Branson (2006) say, excellence develops through deliberate practice, which results from many successful years of practice. Ability to switch perspectives, willingness to learn, finding information, and professional commitment on the other hand predict development of professionalism in a certain domain.

Various specific competences are important for the development of expertise, and Mieg (2009) spreads them into three categories: using tool interactively (referring to language and technology), interacting in socially heterogeneous groups, and acting autonomously. He also includes three indicators which represent the general capacity of learning to learn: willingness to learn, systematic thinking, and managing. Education and key competences are only a condition for development of excellence and professionalism, and do not necessarily lead into expertise.
Expanding argumentation of Sternberg and Frensch (1992), it can be assumed that both aspects of attributed expertise pay out. Mieg (2009) shows practical implications to the concept of expertise: excellent expert should receive additional resources to enhance his/her expertise; the professional expert should be offered positions in professional associations and other workplaces that are dominated by that particular domain.

1.3 MEASURING EXPERTISE

There is very little empirical evidence that supports the superior performance regarding to talent. Measuring expertise with objective tests for basic cognitive, perceptive and motoric abilities was unsuccessful in predicting achievements of individuals in specific domains (Ericsson, Krampe, & Tesch-Römer, 1993). Test controlled for obtained knowledge and skills were also unsuccessful (Ericsson & Charness, 1994). The problem with these approaches was an unsuitable selection of test-tasks – they were not sufficiently specific and as such did not reflect actual abilities of an individual in his/her domain of work.

The conditions of testing in many sports and other activities, like typing competitions, are clearly set for all participating individuals. In other domains, the criteria for expert performance cannot be easily transferred into a set of standardized tasks that captures and measures that performance. In some domains, expert performance is determined by judges or by the results of competitive tournaments (Ericsson & Charness, 1994). In majority of domains, it is easier to identify individuals that are socially recognized as experts, than it is to specify observable performance at which these individuals excel. The distinction between perception of expertise and actual expert performance should not be ignored, as research show that the performance of some individuals who are nominated as experts is not measurably superior (Ericsson & Charness, 1994).

There have been several attempts at constructing universal questionnaires that would identify experts regardless of their domain of work. In this way, it would be possible to avoid the troublesome and time-consuming construction of domain specific and representative tasks. Van der Heijden (2002) in one of the first attempts in this area of research constructed a reliable, multidimensional and domain non-specific psychometric instrument to measure expertise in five dimensions: knowledge, meta-cognitive knowledge, skill requirement, acquiring social recognition, and growth and flexibility.

Mieg (2009) years later based his research on a sample of Swiss environmental professional using a self-assessment questionnaire. He researched three base fields of expertise: reliably superior results, deliberate practice, and cognitive adaptation. Results show a two-factor structure, that is professionalism and excellence. According to his results the latter is highly connected to age and years of practice, and seems to be more attributed to male experts. Professionalism, on the other hand, seems to be negatively connected to age and years of practice and positively correlated to professional commitment and deliberate practice. Mieg (2009) believes that van der Heijden’s (2002) research on the concept of expertise could be similarly interpreted – instead of five, he suggests two factors: achievement and social recognition.
In a recent study Germain and Tejeda (2012) similarly distinguish between objective and subjective expertise. Objective expertise (knowing work, knowing field of work, appropriate education, and appropriate qualifications, having training for a specific work and doing research) can be measured with tests of knowledge, or checking for academic and other achievements. Subjective expertise, on the other hand, represents a manipulation of expertise perception, because it does not feature a skill as such. These characteristics are said to represent an expert: ambition, drive, desire for improvement, charisma, deductive skills, intuitive problem solving, problem judgment, being self-assured, confidence, ability to talk through work, and sociability.

### 1.3.1 Hypotheses

In the present research we verified the structure of expertise as Mieg (2009), and Germain and Tejeda (2012) separately define it. We were interested in who can be an expert, and how to recognize one. We researched which key competencies, according to Mieg, relate to the factors of expertise. In other words, we tried to determine which competencies cover the arrange of expertise-related skills. Furthermore we were interested in the connection between two different psychological instruments that measure expertise. If there was a connection between them, we could conclude that we are dealing with a unified, stable construct, or simply said that the questionnaires are measuring the same thing. We also wanted to look at the developmental aspect of expertise. We expected to confirm that at least ten years of practice in a certain field is needed in order to reach an ‘excellent’ performance. Mieg reported gender differences in excellence, but not in professionalism. We expected similar results.

### 2 METHODOLOGY

#### 2.1 SAMPLE AND DATA COLLECTION

More than ten Slovenian organizations and a primary school were addressed to participate in our research, but despite all efforts only half of them responded. After contacting their human resources management and introducing our research, we explained two conditions of participation: only people with higher level of education, and pairs of co-workers who know each other could participate. The required higher level of education was chosen for various reasons; i) we decided to conduct the research under similar conditions to Mieg’s research and ii) because experts set domain-specific standards, which requires access to higher levels of domain development. Under the same conditions we also invited potential participants through a website; we invited members of a Slovene professional association, and individuals using ‘snowball’ principle. We collected data from 154 participants, 50 of them male and 104 female. A higher proportion of female participants were expected, since according to the Statistical Office of Slovenia the number of women with tertiary education exceeds the number of men by approximately four percentage points (Malešič, 2011). The sample is somewhat gender imbalanced.

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shares of participants in individual age groups.</td>
</tr>
</tbody>
</table>
The average age of participants is 37.2 years, whereas the average age of work active population in Slovenia in 2010 was 40.9 years (Malešič, 2011), making our sample of participants somewhat younger when compared with Slovenian general population.

### Table 2
*Share of participants by work domains.*

<table>
<thead>
<tr>
<th>Field of work</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science and research</td>
<td>0.10</td>
</tr>
<tr>
<td>Medical service</td>
<td>0.06</td>
</tr>
<tr>
<td>Social services</td>
<td>0.03</td>
</tr>
<tr>
<td>Computer sciences and programing</td>
<td>0.16</td>
</tr>
<tr>
<td>Law</td>
<td>0.01</td>
</tr>
<tr>
<td>Education</td>
<td>0.34</td>
</tr>
<tr>
<td>Banking and financial services</td>
<td>0.08</td>
</tr>
<tr>
<td>Other</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Participants from our sample work in different domains. Most of them work in the field of education, followed by computer sciences and programing, and category Other. The latter was picked by individuals that could not place their workplace into other offered categories of work. These are workplaces that could be defined as architecture and construction, infrastructure, wellness and working with people in the broader meaning.

Data was collected in electronic form and by paper-pencil method, both versions of questionnaires being exactly the same. Research data has been collected through two questionnaires – we applied the self-assessment Expertise Questionnaire (EQ), with which each participant assessed him/herself, and General Expertise Measure (GEM), which has been filled out by a co-worker of that person. They evaluated if and to what extend their colleague is an expert. The goal was to get pairs of data and compare them, but with GEM we experienced a drop of participants. EQ was filled out by 89 participants, while GEM only gathered 65 results. In comparing the data between the used questionnaires, we thus considered 65 pairs of participants.

### 2.2 Measures

We used two different questionnaires. The EQ is a translated and updated version of the questionnaire that was used by Mieg (2009) in his data research. An agreement for its use and altering has been given to us by the aforementioned author. GEM questionnaire has been
translated and updated, and their authors, Germain and Tejeda (2012), have given their permission as well.

The EQ is a self-assessment questionnaire consisting of eleven competences of expertise, and nine statements that define expertise. The person first evaluated, on a 7-point scale, to which degree he possesses the available competence, 1 meaning ‘very little’, and 7 meaning ‘a lot’. Two of the competence apply to the general capacity of learning to learn: willingness to learn, and managing; three apply to acting autonomously: personal initiative, tolerance for frustration, goal-orientated work; three to interacting in socially heterogeneous groups: team capacity, switching into perspective of others, and motivating people; and, lastly, three competence apply to using tools interactively: finding information, self-presentation skills, and literary skills. The participants also marked where they got the mentioned competence. They could choose between “Education”, “Experience”, and “Other”.

After that, the 7-point scale with nine items asked them to which extend they agree with the given statements. They were designed by the pattern of “My colleagues would say that I am …”, which means that participants evaluated themselves by stepping into the perspective of their co-workers. The reason for such sentence construction is in the social component of expertise. Participants evaluated themselves on the following sentences: “... I am and old hand in my discipline.”, “... I am completely absorbed by my work.”, “... I work with a clear focus.”, “... I am among the top 10% performers in my discipline.”, “... I know how to get to the core of a problem.”, “... I am very ambitious.”, “... I have no problems taking on responsibility for our discipline.”, “... I am very active in my field.” and “... I always strive to improve my expertise.”. We also asked the participants for some demographic data.

The GEM questionnaire has been filled out by a co-worker, who assessed what kind of an expert his/her colleague is. The questionnaire encompasses 17 items that apply to both objective and subjective expertise. Items, dealing with objective expertise, apply to formal education and qualifications of an individual, meaning: “This person has knowledge that is specific to his or her field of work”, “This person shows that they have the education necessary to be an expert in their field of work”, “This person has knowledge about their field”, “This person has the qualifications required to be an expert in their field”, “This person has been trained in his or her area of expertise”. The sentences that apply to subjective expertise are: “This person is ambitious about their work in the company”, “This person can assess whether a work related situation is important or not”, “This person is able to judge what things are important in their job”, “This person is capable of improving himself or herself”, “This person is charismatic”, “This person can deduce things from work-related situation easily”, “This person is intuitive in their job”, “This person can assess whether a work-related situation is important or not”, “This person has the drive to become what he or she is capable of becoming in their field”, “This person is self-assured”, “This person has self-confidence”, “This person is an expert who is outgoing”, “This person can talk his or her way through any work-related situation”. The participants were also asked to assess how well they know the colleague they are evaluating, and share some demographic data.

2.3 RESULTS
The reliability of the self-assessment questionnaire (Mieg, 2009), measured by Cronbach’s alpha coefficient, equals $\alpha = .83$, which shows high reliability.

Table 1 shows rotated and unrotated factors. The resulting factor structure is similar to Mieg’s study (2009). After the rotation, the factor of excellence is most heavily saturated by the following items “... I am among the top 10% performers in my discipline.,” and “... I am and old hand in my field of work.”. The component of professionalism is most notably saturated with the remaining items; “... I am very active in my field.” and “... I always strive to improve my professional competence.” Following Mieg (2009), who reported a very low correlation between the factors ($r = .17$), the authors have decided for Varimax rotation. Using the Direct oblimin rotation, even in our case, there is a low correlation between both factors ($r = .133$).

Table 1
An expertise-scale and two factors of expertise (principle component analysis)

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>Factor a</th>
<th>Professionalism</th>
<th>Excellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>… I am an &quot;old hand&quot; in my discipline.&quot;</td>
<td>.483</td>
<td>.716</td>
<td>-.012</td>
<td>.864</td>
<td></td>
</tr>
<tr>
<td>… I am completely absorbed by my work.&quot;</td>
<td>.680</td>
<td>.063</td>
<td>.522</td>
<td>.441</td>
<td></td>
</tr>
<tr>
<td>… I work with a clear focus.”</td>
<td>.696</td>
<td>-.201</td>
<td>.686</td>
<td>.233</td>
<td></td>
</tr>
<tr>
<td>… I am among the top 10% performers in my discipline.” (I belong to the top 10% of our profession?)</td>
<td>.750</td>
<td>.370</td>
<td>.404</td>
<td>.731</td>
<td></td>
</tr>
<tr>
<td>… I know how to get to the core of a problem.&quot;</td>
<td>.728</td>
<td>.001</td>
<td>.597</td>
<td>.417</td>
<td></td>
</tr>
<tr>
<td>… I am very ambitious.”</td>
<td>.636</td>
<td>-.124</td>
<td>.593</td>
<td>.261</td>
<td></td>
</tr>
<tr>
<td>… I enjoy taking on responsibility for our discipline.&quot; (I am someone who likes to take responsibility.)</td>
<td>.714</td>
<td>.050</td>
<td>.558</td>
<td>.448</td>
<td></td>
</tr>
<tr>
<td>… I am very active in my field.&quot;</td>
<td>.769</td>
<td>-.211</td>
<td>.752</td>
<td>.266</td>
<td></td>
</tr>
<tr>
<td>… I always strive to improve my expertise.&quot;</td>
<td>.488</td>
<td>-.659</td>
<td>.776</td>
<td>-.262</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Varimax rotation, Kaiser-normalization. With Direct oblimin rotation we can see that the factors are very weakly correlated ($r = .133$).

The model in Figure 1 fitted to data: $\chi^2 = 191.37; df = 64; \chi^2/df = 3.8; CFI = .90; RMSEA = .06 (.05–.07); SRMR = .07$. 


Figure 1. Structural equation model of the two factors of expertise, measured with Mieg's expertise questionnaire (2009).

To confirm the definition of the concept of expertise, it needs to be examined how the aforementioned construct correlates with certain competencies. The validity of the construct itself depends on it. For a more detailed understanding of differences between excellent and professional experts, we should take a look at Table 2 and see how specific competencies correlate with both factors.

Table 2
Correlations between both factors of expertise, according to Mieg (2009), and the general work competencies

<table>
<thead>
<tr>
<th></th>
<th>Excellence</th>
<th>Professionalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiative</td>
<td>.400</td>
<td>.503</td>
</tr>
</tbody>
</table>
Professionalism ($r = .165$), as opposed to excellence ($r = .499$) does not correlate statistically significant with years of practice in a domain.

Figure 2 shows a third-order polynomial function for excellence, depending on years of practice ($n = 98$). Excellence grows with years of practice and reaches the sample average value of excellence at approximately 14 years. This partially confirms the ten-year rule – expertise being reached after at least ten years of deliberate practice. Fall of excellence between the sixth and tenth year, can be understood as a consequence of sample specifics.

<table>
<thead>
<tr>
<th></th>
<th>Team work</th>
<th>Stress</th>
<th>Information</th>
<th>Managing</th>
<th>Self-presentation</th>
<th>Perspective</th>
<th>Learning</th>
<th>Motivating</th>
<th>Verbal literacy</th>
<th>Goal orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.130</td>
<td>.256</td>
<td>.178</td>
<td>.450</td>
<td>.413</td>
<td>.227</td>
<td>.225</td>
<td>.255</td>
<td>.217</td>
<td>.419</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. The polynomial function of excellence.

The level of correlation between the self-assessment questionnaire of expertise (Mieg, 2009) and the general scale of expertise (Germain and Tejeda, 2012) equals $r = .33$, which means that the
content of one questionnaire only partially corresponds with the content of the other questionnaire, due to specific content of their items. The reliability of GEM (Germain and Tejeda, 2012), measured by Cronbach’s alpha coefficient, equals $\alpha = .89$.

Factor structure of GEM (Germain and Tejeda, 2012) consists from two factors. In Table 3 one can look at the structure that resembles the one described by Germain and Tejeda (2012) in their study, but with the difference of our sample showing that self-confidence and self-assurance have a bigger role in saturating the factor of objective expertise. Because of the high level of saturation in both factors, the role of the mentioned points is questionable.

Table 3

<table>
<thead>
<tr>
<th>Factor</th>
<th>Subjective exp.</th>
<th>Objective exp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knows work</td>
<td>.136</td>
<td>.706</td>
</tr>
<tr>
<td>Education</td>
<td>-.085</td>
<td>.727</td>
</tr>
<tr>
<td>Knows field</td>
<td>.193</td>
<td>.528</td>
</tr>
<tr>
<td>Qualification</td>
<td>.411</td>
<td>.402</td>
</tr>
<tr>
<td>Has training</td>
<td>-.190</td>
<td>.806</td>
</tr>
<tr>
<td>Is ambitious</td>
<td>.452</td>
<td>.269</td>
</tr>
<tr>
<td>Improves</td>
<td>.696</td>
<td>.019</td>
</tr>
<tr>
<td>Assesses</td>
<td>.484</td>
<td>.222</td>
</tr>
<tr>
<td>Charismatic</td>
<td>.574</td>
<td>.204</td>
</tr>
<tr>
<td>Deduce</td>
<td>.530</td>
<td>.314</td>
</tr>
</tbody>
</table>

Intuitive | .836 | -.103 | .788 | .350 |
Judge | .852 | -.214 | .752 | .248 |
Has drive | .746 | .005 | .748 | .408 |
Self-assured | .275 | .547 | .529 | .692 |
Confident | .347 | .475 | .567 | .659 |
Outgoing | .403 | -.063 | .373 | .155 |
Talks through | .460 | .150 | .529 | .397 |

Note: *Promax rotation, correlation between factors equals $r = .567$.

The model in Figure 4 fitted to data: $\chi^2 = 189.16; df = 64; \chi^2/df = 3.6; CFI = .82; RMSEA = .06 (0.05–0.07); SRMR = .06$. 
Figure 3. Structural equation model of the two factors of expertise, measured with GEM by Germain and Tejeda (2012).

In Table 4, the important correlations between the EQ and GEM questionnaires are shown. The interesting bits are the correlations between items measuring formal education – qualification of the individuals, which represent the so called objective expertise, and the items of EQ that apply to excellence. Those two items are “... I am among the top 10% performers in my discipline.” and “... I am an old hand in my discipline.”. Some of the other items, pertaining to the subjective expertise, apply to professionalism related items.

Table 4
Correlation between the most highly correlating items of the EQ and GEM

<table>
<thead>
<tr>
<th></th>
<th>Initiative</th>
<th>Old Hand</th>
<th>Absorbed by Work</th>
<th>Clear Focus</th>
<th>Top 10 %</th>
<th>Core Problem</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knows Work</td>
<td>.27*</td>
<td>.25*</td>
<td>.25*</td>
<td>.16</td>
<td>.32**</td>
<td>0.20</td>
<td>.12</td>
</tr>
<tr>
<td>Knows Field</td>
<td>.22</td>
<td>.29*</td>
<td>.22</td>
<td>.12</td>
<td>.30*</td>
<td>.16</td>
<td>.24</td>
</tr>
</tbody>
</table>
For individuals that thought their work completely absorbs them, their colleagues judged that they are ambitious, they are able to judge what things are important in their job, they have the drive to become what he or she is capable of becoming in their field, and are self-confident. Similar things can be said for individuals that work with clear focus. Their colleagues believe they work intuitively and they find them charismatic. For individuals that know how to get to the core of a problem and have no difficulties taking on responsibilities, the defining characteristics are a charismatic personality and ambitiousness, together with an ability to derive conclusions from workplace situations, colleagues agreed. Responsible individuals are capable of assessing which work-related information is really important.

Among the competences that are characteristic for expertise, being initiative stands out the most and is connected to numerous subjective aspects of expertise. Initiative individuals are, in their colleagues’ opinions, capable of self-improvement, are charismatic and have the energy to become the most they can be in their field of work. Moreover they are capable of intuitive work and can deduce things from work-related situation easily.

Self-confidence is one of the key characteristics of subjective expertise, because it correlates with nearly all competencies of expertise and items pertaining to excellence and professionalism. Self-confidence positively correlates with personal initiative (r = .26, p < .05), tolerance for frustration (r = .32, p < .01), management (r = .28, p < .05), self-presentation skills (r = 0.40, p < .01), switching into perspective of others (r = .34, p<.01), verbal literacy (r = .31, p < .05) and goal oriented work (r = .39, p < .01). Self-confidence is representative of people who are ‘old hands’ in their fields of work (r = .37, p < .01), individuals among top 10% performers in their discipline (r = .53 p < .01), individuals that are absorbed by their work (r = .33, p < .05) those who work with a clear focus (r = .29, p < .05), those who can get to the core of the problem (r = .45, p < .01), and those who take on responsibility at their workplace easily (r = .41, p < .01).

These results suggest some managerial implications: to reach an excellent expert performance one has to be active in his or her domain for more than 10 years, but to reach such a level being active is not enough. Throughout years individuals can reach professionalism by showing several work-related behaviors and competences. Moreover in order to be referred an expert one has to demonstrate some personality characteristics that are socially acknowledged as expert-like.
3 CONCLUSIONS

Looking at the structure of expertise, we confirmed Mieg’s (2009) two-factor solution. This means that, with the help of the self-assessment questionnaire, we are able to find the dominating features of both: excellence and professionalism. Because the concept of expertise carries a wide, yet from the individual and organizational standpoint a key construct, we need to keep in mind that the work of experts reveals itself in different ways, and each of those has its own distinct advantages.

Individuals that scored higher on the excellence factor show behavioral characteristics that represent top notch achievements and confirm the ‘old hand’ status. These established experts seem less ambitious and less oriented towards being promoted than professional experts, which enables them to obtain a specific role in organization. Their colleagues describe these individuals as well-qualified for their work, with a lot of field-specific knowledge and beforehand education, but notice less ambition and will to improve.

As opposed to ambitious and work-centered professional experts, individuals that scored high on the excellence factor can take on mentor and guiding roles with greater ease. There, the goal is not their own achievement, but rather requires transferring their already established knowledge to other, younger (professional) colleagues. Expertise as excellence is a characteristic that is bound to an individual as such. We are talking about people with a high level of quality work, achieving top results in their field. We discovered that gender related differences are negligible, and that the individual’s expertise rises with the number of years spent actively working in a certain field. From the aspect of expertise as excellence we can confirm the so-called ten-year rule, because excellence grows with the number of years invested in practice, and only reaches the sample average value of excellence after 14 years. This, luckily, means that we can, with suitable measurement tools, discover the individual’s potential for expertise as excellence before being fully developed. As ‘experts in development’ we can thus reveal those people in whom expertise reveals itself as professionalism.

How to recognize employees who are well on their way to become experts? This potential is described by Mieg’s (2009) factor of professionalism. These individuals are highly motivated, ambitious and prepared to take on responsibility in work-related situations. They are looking to improve and educate, ready to gain new, field-related knowledge. As opposed to excellent experts, for whom Erikson (2006) claims they best fit the classic image of expertise, the professional experts are more focused on developing a certain discipline, than to developing their own skill and knowledge.

If the individuals with excellence characteristics are better suited for positions of mentors, then what is the appropriate role of the more professionally oriented individuals? Due to a high correlation between the professional side of expertise and the competencies of initiative, organization and goal orientation, these individuals can effectively obtain responsible places in organization as leaders of work groups, coordinators, project organizer, and initiators in problem solving. Individuals who are placed high on the professionalism factor would, given a choice, largely pick the same profession they have now, which speaks about their enthusiasm and dedication.
But expertise is not only a condition that an individual achieves: recognition form others is also an important aspect of being referred to as an expert. GEM (Germain and Tejeda, 2012) deals with this question specifically. Our research confirmed the two-factor structure of expertise as an objective measure on one side, and the subjective measure on the other. Expertise can be shown through measurable (provable) indicators, such as corresponding qualifications, knowledge of the field, the necessary education for work, and special field-specific knowledge, while the subjective factors are more bound to charisma, invested energy, sociability and intuition. An expert is thus not only someone who achieves high results and has the necessary education, but rather someone who also possesses certain personality traits that society views as expert-related. The latter is what determines whether leaders will be trusted by their colleagues and co-workers, or if their orders will be followed.

Our research has some limitations that could be improved in further research. Due to measuring expertise with a questionnaire that is based on self-assessment, it might prove useful to equalize possible lenience towards praised behavior. One way could be through the use of so-called honesty scale, with which we could evaluate to what degree the participants are answering honestly, or, to which degree they were adjusting their answers to be ‘socially more acceptable’. Our results show that the estimate of an individual’s expertise – as assessed by their co-workers – is only somehow comparable with self-assessment of participants. The correlation between the two questionnaires is relatively low. Stemming from this, we believe that different perspectives ways of measuring expertise cannot be fully unified yet, due to the lack of theoretical integration inside this young area of research.

This is why it is very important, from the organization’s standpoint, that expertise is treated from different aspects, in accordance with the purpose of research. Who is an expert? An expert can be anyone, but not everyone. For the organization, an identification of potential and existing experts is important to enable them to work with human resources. With further research it might be possible for organizations’ management to recognize experts and put them on the most appropriate position, invest in their further education, specialization or even recognize individuals’ expert potential during the selection process. Though it must be emphasized that such methods must be used carefully since self-assessment instruments are prone to many biases (cf. Dunning, Heath, Suls, 2004). Furthermore, an inadequate explication of the aim of applying a general expertise questionnaire, like openly linking employees’ promotion, awards or other benefits to results on such instrument, could result in untruthful answers and biased outcome.

This paper is a step towards evolving a general questionnaire that could offer to organizations a relatively economical and efficient way to recognize key individuals, and so enable them growth and development. At this point we are closer to defining, who is an expert and raising awareness of organization’s key employees.

REFERENCES


