Tacit Knowledge Inventory for Managers and Assessment Center - comparison of results.

Anna Baczyńska, PhD
Introduction
• Explanation of main terms such as Triarchic Theory of Successful Intelligence and practical intelligence.

Content – Methods used in the research project
• Tacit Knowledge Inventory for Managers (TKIM) – measurement of practical intelligence – situational judgment test
• Structure of Assessment Center – examples of measured competencies, competency matrixes, types of simulations, rules followed during AC.
• Additional measures: (1) personality – two dimensions – consensio and intention (2) Raven- analytical intelligence.
• Type of statistical analysis of the data which was used in the research project.

Conclusion
• Results of the research project and main conclusions.

Q & A
INTRODUCTION - STERNBERG’S THEORY OF INTELLIGENCE
Sternberg’s Theory of Intelligence

“the cognitive ability

• to learn from experience,
• to reason well,
• to remember important information,
• and to cope with the demands of daily living.”

Sternberg’s Theory of Intelligence

- Sternberg believes that intelligence is comprised of three separate, though interrelated, abilities:

  - **Analytic intelligence**: Mental steps or "components" used to solve problems.
  - **Creative intelligence**: Use of experience in ways that foster insight.
  - **Practical intelligence**: Ability to read and adapt to the contexts of everyday life.
Practical intelligence ability that individuals use to find a more optimal fit between themselves and the demands of the environment through:

- adapting to the environment
- shaping (or modifying) the environment
- selecting a new environment

in the pursuit of personally-valued goals
Practical intelligence can be characterized as:

• “street smarts” or “common sense,”

• and can be contrasted with academic intelligence or “book smarts.”

• Practical intelligence encompasses the abilities one needs to succeed in everyday life, including in one’s job or one’s career.
Sternberg and his colleagues have taken a knowledge-based approach to understanding practical intelligence. Individuals draw on a broad base of knowledge in solving practical problems, some of which is acquired:

- through formal training
- and some of which is derived from personal experience.
Much of the knowledge associated with successful problem solving can be characterized as tacit.

It is knowledge that typically is not openly expressed or stated — it is acquired largely through personal experience and guides action without being readily articulated.
Tacit knowledge

- The term *tacit knowledge* has roots in works on:
  - the philosophy of science (Polanyi, 1966),
  - ecological psychology (Neisser, 1976),
  - organizational behavior (Schön, 1983),

and has been used to characterize the knowledge gained from everyday experience that has an implicit, unarticulated quality.
Such notions about the tacit quality of the knowledge associated with everyday problem solving also are reflected in the common language of the workplace as people attribute successful performance to "learning by doing" and to “professional intuition” or “instinct.”
The Conceptualization of Tacit Knowledge

• Tacit knowledge is conceptualized by Sternberg and his colleagues according to three main features, which correspond to:
  
  - the conditions under which it is acquired
  - its structural representation,
  - and the conditions of its use.
1. First, tacit knowledge is viewed as knowledge that generally \textbf{is acquired with little support from other people or resources.}

- The individual is not directly instructed as to what he or she should learn, but rather \textbf{must extract the important lesson from the experience even when learning is not the primary objective.}
- Formal training environments facilitate certain knowledge-acquisition processes.

These processes include:

- \textbf{selective encoding} (sorting relevant from irrelevant information in the environment),
- \textbf{selective combination} (integrating information into a meaningful interpretation of the situation),
- and \textbf{selective comparison} (relating new information to existing knowledge) (Sternberg, 1988).
2. Second, tacit knowledge is viewed as procedural in nature.

- It is knowledge about how to perform various tasks in various situations.
- Drawing on Anderson’s (1983) distinction between procedural and declarative knowledge, tacit knowledge is drawn from personal experience.
„Procedural in nature”. These complex rules can be represented in the form of condition-action pairings.

For example, the knowledge of how to respond to a red traffic light could be represented as:

- IF <light is red> THEN <stop>

Of course, the specification of the conditions and actions that make up proceduralized knowledge can be quite complex.

In fact, much of the tacit knowledge that we have observed seems to take the form of complex, multicondition rules for how to pursue particular goals in particular situations.
For example, knowledge about getting along with one's superior might be represented in a form with a compound condition:

IF <you need to deliver bad news>
AND
IF <it is Monday morning>
AND
IF <the boss's golf game was rained out the day before>
AND
IF <the staff seems to be "walking on eggs">
THEN <wait until later>
3. The **third** characteristic feature of tacit knowledge is that it has **direct relevance** to the individual’s goals.

- It is based on one’s own practical experience
  - For example, leaders may be instructed on what leadership approach (e.g., authoritative vs. participative) is supposed to be most **appropriate** in a given situation, but they may learn from their own experiences that some other approach is more **effective** in that situation
RESEARCH – THEORETICAL BASE
Variables

• Variable (1) – managerial competencies ➔ AC
• Variable (2) – practical intelligence ➔ TKIM
COMPETENCY
Competency

• Competencies are perceived as **demonstrable characteristics of a person that show good job performance.**
COMPETENCE=
Category of behaviour that guarantees effectiveness in achieving aims

- Competencies are not directly measurable. We can deduce about them based on behaviours.
- We create definitions and descriptions of competencies based on observations of co-existing habits.
How did we write job competencies?

• Interview job incumbents and their supervisors
  – Identify critical incidents that pinpoint success on the job.
**EMPLOYEE DEVELOPMENT (EDE)**

Interest and commitment to long term action stimulating employees to gain and develop new skills and qualifications. Acting as a mentor to employees.

<table>
<thead>
<tr>
<th></th>
<th>Takes no development action</th>
<th>Takes singular development action</th>
<th>Takes short–term development action</th>
<th>Takes long–term development action</th>
<th>Takes a mentor role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="https://example.com" alt="List of actions" /></td>
<td>Shows no interest in the matters of subordinates.</td>
<td>Gives practical instructions.</td>
<td>Encourages subordinates to assess their strengths and areas for improvement.</td>
<td>Has respect due to expert knowledge.</td>
</tr>
<tr>
<td></td>
<td><img src="https://example.com" alt="List of actions" /></td>
<td>Uses pressure in contact with subordinates.</td>
<td>Points to particular behaviour of subordinates, which require improvement.</td>
<td>Establishes long–term development plans together with subordinates.</td>
<td>Builds relationships through involvement in development issues of the subordinates.</td>
</tr>
<tr>
<td></td>
<td><img src="https://example.com" alt="List of actions" /></td>
<td>Concentrates on negative assessment of subordinates.</td>
<td>Dictates solutions instead of consulting subordinates about their ideas.</td>
<td>Delegates taking decisions aimed at development to subordinates.</td>
<td>Prepares own successor to take new role in the organisation.</td>
</tr>
<tr>
<td></td>
<td><img src="https://example.com" alt="List of actions" /></td>
<td>Keeps formal relationships with subordinates.</td>
<td>Gives advice and lectures.</td>
<td>Identifies own successors.</td>
<td><img src="https://example.com" alt="List of actions" /></td>
</tr>
<tr>
<td></td>
<td><img src="https://example.com" alt="List of actions" /></td>
<td>Does not ask subordinates for their opinions.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**INFLUENCE**

Positive influence on relations among people, strengthening individuals, teams and organizations.

<p>| | | |</p>
<table>
<thead>
<tr>
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</thead>
</table>
| 1 | Doesn’t exert an influence | • Submits to the influence of others  
• Allows for manipulation  
• Doesn’t use influence techniques |
| 2 | Exert weak direct influence | • Manipulates with facts in dependence on situation/needs  
• Uses “stick and carrot” technique  
• Concentrates on emotional arguments instead of rational ones  
• Exert an influence by pressure, force, authority or persistence  
• Undertakes personal attack, instead of concentrating on the task  
• Builds coalition |
| 3 | Exert effective direct influence | • Diagnoses strengths and weaknesses of himself and others  
• Foresees arguments of the other side  
• Constructively refers to the arguments  
• Uses arguments with certainty  
• Exert an influence mainly by rational persuasion |
| 4 | Exert effective indirect influence | • Leaves space for other concepts  
• Adjusts arguments to an interlocutor  
• Exert an influence mainly by consulting others  
• In presented concepts takes into account reactions of others |
| 5 | Exert effective strategic influence | • Gains aims of an organization by engaging others  
• Takes into account broad context and sophistication of relations  
• Takes into account potential conflicts of interests between teams in an organization  
• Can manage potential conflict so as to gain common profits |
TACIT KNOWLEDGE INVENTORY FOR MANAGERS
The Measurement of Tacit Knowledge

- Because people often find it difficult to articulate their tacit knowledge, we measure tacit knowledge in the responses individuals provide to practical situations or problems, particularly those situations in which experience-based, tacit knowledge is expected to provide an advantage.

- The measurement instruments used to assess tacit knowledge typically consist of a series of situations and associated response options, which have been characterized in the literature as situational judgment tests.
These types of tests generally are used to measure *interpersonal and problem-solving skills or behavioral intentions.* In a situational-judgment or tacit-knowledge test:

- each question presents a problem relevant to the domain of interest
- followed by a set of options for solving the problem

Respondents are asked either to choose the best and worst alternatives from among a few options, or to rate on a Likert scale the quality or appropriateness of several potential responses to the situation.
The development of tacit-knowledge (TK) tests, like many SJTs, begins with the identification of critical incidents in the workplace.

Individuals are asked to provide accounts of incidents from which they learned an important lesson about how to perform their job that was not something they had been taught in school or about which they had read in a textbook or manual.
• A TK test may consist of several situational descriptions, each followed by multiple response options, which vary in their appropriateness.

• In our research we used the Tacit Knowledge Inventory for Managers (Polish version).
Tacit Knowledge Inventory for Managers (TKIM) is a situational judgment test.

- Polish adaptation of the TKIM is a reliable tool.
- As a measure of internal consistency Crombach alpha factor was calculated for the 91 questions inventory = 0.882
Scenario # 1
You are an executive vice-president in the marketing division of Sherman Electronics, a company that sells audio and video supplies. You have been with Sherman Electronics since finishing college, having spent thirteen years in a managerial role in human resources, and two years in your present position. Sherman Electronics has been losing market share for its products steadily over the past five years. Sherman’s strength in the past has been introducing new products before its competition, but now its product line seems to be three steps behind the leaders in a rapidly changing market. A strategy of focusing on more stable segments of the market has been aborted because of fierce competition from large overseas companies. You believe that your lack of knowledge about the latest audio and video products and technology limits your effectiveness. Your schedule is very busy, but you think it is important to catch up on, and keep up with, innovation that affects your industry.

Rate the quality of the following strategies for becoming more knowledgeable about new products and technology on a 1- to 7-point scale.

1. Ask for a leave of absence to pursue an advanced technical degree.

2. Order a news clipping service (news clipping services provide news from a large number of sources on a given topic).

3. Subscribe to several technical journals relevant to your manufacturing operations.

4. Subscribe to several consumer oriented magazines that cover your products.

5. Begin attending trade shows of products in your industry.

6. Ask to sit in on weekly discussions of new product ideas held by the Research and Development division.

7. Attend a series of technical presentations by research scientists from outside the company who are brought in by the Manufacturing Operations division.

8. Hire a staff member whose primary responsibility is to keep you abreast of current trends in your industry.

9. Ask the engineering division to prepare monthly summary reports of innovative products.

10. Ask for weekly presentations for you and your staff on technical issues by staff in the Research and Development and Manufacturing Operations divisions.
Tacit-knowledge tests have been scored in one of four ways:

(a) by correlating participants' ratings with an index of group membership (i.e. expert, intermediate, novice),
(b) by judging the degree to which participants’ responses conform to professional "rules of thumb,"
(c) by computing a profile match or difference score between participants’ ratings and an expert prototype,
(d) on a theory-determined basis.

Scores on TK tests have been evaluated relative to various indicators of performance, measures of g, experience, and other predictors (e.g., personality).
Research on Tacit Knowledge

• Sternberg and his colleagues have used TK tests to study academic psychologists, salespersons, high school and college students, civilian managers, and military leaders, school teachers, principals - in roughly 50 varied occupations in the United States and Spain.
Tacit Knowledge and Experience

- The common phrase “experience is the best teacher” reflects the view that experience provides opportunities to develop important knowledge and skills related to performance. Several meta-analytic reviews indicate that the estimated mean population correlation between experience and job performance fall in the range of .18 to . Additional research suggests that this relationship is mediated largely by the direct effect of experience on the acquisition of job knowledge.
Tacit knowlegde vs Competency

• We assumed that Tacit knowledge is a kind of source of competency.
STRUCTURE OF ASSESSMENT CENTER
Measured competencies

• In Assessment Center simulations 7 competencies were measured such as:

- leadership
- cooperation
- initiative
- goal orientation
- development of employees
- change orientation
- influence
- communication
Our guideline.

- In each Assessment Center session we used different exercises: group, individual and pair work.
- After each exercise we gathered single grades from Assessors who watched participant in AC.
- In each exercise one participant was observed by 2 Assessors.
- After each AC we gathered grades and made a few hours session during which we established grades from all simulations for all measured competencies in AC.
- One competency was observed in at least two simulations.
- Each exercise had instruction for participants and instruction for Actors.
- Actors and Assessors had a training on competencies model and exercises which are used in AC.
RESEARCH
The research presents the comparison of practical intelligence and managerial competencies within a group of 220 Polish managers.
Method

• Practical intelligence was measured with Tacit Knowledge Inventory for Managers and managerial skills were assessed with the Assessment Center method.

• N= 220 – middle and high management level;

• average age= 38.
• TKIM have been scored by computing difference score between participants’ ratings and an expert prototype profile.
• We compare them to the answers of managers who are Experts.
• The overall result (total) based on the results obtained from all 91 replies (items). It shows the relative overall compliance of the applicant with the experts-managers in the organization.
• In our key we used 53 items (we find here the smallest differences (formula $z: z-1; z+1$).
In statistical analysis we used the clusters analysis method and divided managers into three groups:

- group I = 56 managers with an average level of competence = 1.7 in a scale of five,
- group II = 114 managers with an average score of competence = 2.5
- group III = 50 managers with average level of competence = 3.2.

After that we compared scores in TKIM with the results obtained in AC by three groups with Kruskal-Wallis test.
Results and Conclusion

Statistical analysis of the data showed significant correlations between the two variables – practical intelligence and managerial competencies. High scores in Practical Intelligence are connected with high levels of competencies observed in Assessment Center simulations.

<table>
<thead>
<tr>
<th></th>
<th>Practical Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kruscal Wallis Test</td>
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<tr>
<td>Chi Square</td>
<td>9.79</td>
</tr>
<tr>
<td>Df</td>
<td>2</td>
</tr>
<tr>
<td>Significance</td>
<td>p=0.008</td>
</tr>
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</table>
• Practical Intelligence according to Sternberg Triarchic Intelligence Theory and measured by Tacit Knowledge Inventory for Managers (TKIM) is connected with managerial competencies: leadership, change orientation, communication, cooperation, initiative, development of employees, goal orientation, influence assessed in Assessment Center.
• We correlated scenarios and items with competencies.
• Some items correlated with more than one competence.

<table>
<thead>
<tr>
<th>Number of question in TKIM</th>
<th>Communication</th>
<th>Change</th>
<th>Orientation</th>
<th>initiative</th>
<th>development of employees</th>
<th>cooperation</th>
<th>Leadership</th>
<th>Influence</th>
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<td>-.425**</td>
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<td>-.390**</td>
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<td>-.213**</td>
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<td>.095</td>
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<tr>
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<td>-.117</td>
<td>.102</td>
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<td>-.224**</td>
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</tr>
</tbody>
</table>

Correlations are minus because the smaller the difference between experts and participants in TKIM they presented the higher competencies in AC.
Conclusions

1. We can say that TKIM predicts correlations with a few competencies which are assessed in Assessment Center.

2. Based on this study we can say that managerial intuition by Sternberg theory means the same as competencies.

3. If we build Situational Judgment Tests which will be based on competencies model we can measure competencies.

4. We can use this kind of tests as a measure of validity of our Assessment Center sessions.
• In our project we used other measures like:
• (1) personality – two dimensions – consensio – measure of cooperation and intention measure of effort which we put in work;
• (2) Raven- analitical intelligence.
<table>
<thead>
<tr>
<th>Rho Spearman</th>
<th>Competencies Mean</th>
<th>Significance</th>
<th>TKIM</th>
<th>RAVEN</th>
<th>PERSONALITY INTENTIO</th>
<th>PERSONALITY CONSENTIO</th>
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<tbody>
<tr>
<td>Correlation</td>
<td></td>
<td></td>
<td>.251**</td>
<td>.350**</td>
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<td>.400**</td>
</tr>
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<td></td>
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</tr>
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</table>

**. Significant correlation level 0.01
*. Significant correlation level 0.05
References

- Baczynska, A.K., Wekselberg, V. Tacit Knowledge Inventory for Managers – comparision of results. Zarządzanie Zasobami Ludzkimi nr 5 (94)/13, IPISS, Warsaw, s.69-83


Thank you for your attention.