

# How to Improve Your Knowledge Intensive Organisation: Implementing a Knowledge Management Scan Within Public and Private Sector Organisations

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**Abstract:** The Centre of Research in Knowledge Organisations and Knowledge Management of Zuyd University has developed a knowledge management scan

The scan initiates from two models. The first model is based on the Value Based Knowledge Management approach (Tissen, Andriessen & Lekanne Deprez, 1998) and includes 6 basic abilities of a knowledge-intensive organisation that will enable the organisation to operate successfully in a knowledge based economy (.The second model, developed by Wierdsma and Swieringa (2002), categorises organisations according to their level of learning that is to say, how it develops a specific learning ability. Both models are briefly reviewed within this paper. This knowledge management scan is a tool that enables an organisation to assess the development of its six basic abilities. Once the organisation has a clear insight into its own abilities, it will be able to strengthen its overall learning ability and improve the organisations' competitive position.

Additionally we take a close look at our research approach for developing and implementing the knowledge management scan. The scan encompasses 15 statements per ability (90 statements in total). The complete scan will be assessed on a five-point scale by a representative group of selected employees and managers of an organization, supervised by a researcher/consultant.

During the analysis of the results and the presentation of recommendations, specific attention is paid to those statements that achieve high and low scores respectively (invitation to implement improvement actions) and statements that have a relatively high spread across a broad range (differences of opinion or the statement is open to different interpretations). In particular we have examined how the knowledge management scan was put into practice in one of the departments of Zuyd University. After a short summary of the organisation's initial situation, we discuss subsequent steps taken during the assessment, analysis and the advisory process. This paragraph is followed by a concise summary of the results generated by the scan. Finally we offer the recommendations and subsequent steps to be taken to implement these advices in the near future.

**Keywords:** knowledge management scan, assessment, learning organisation

## 1. General introduction

One of the key tasks of the Centre of Research in Knowledge Organisations and Knowledge Management of Zuyd University is to support and nurture local organisations to become a knowledge-intensive organisation. To determine the progress made so far in this endeavour, it is essential to gain an insight into the organisation's progress to date with respect to the critical success factors, i.e. those factors that determine the success of knowledge-intensive organisations. On the basis of this analysis, it is then possible to identify the follow-up steps to be taken to facilitate further growth.

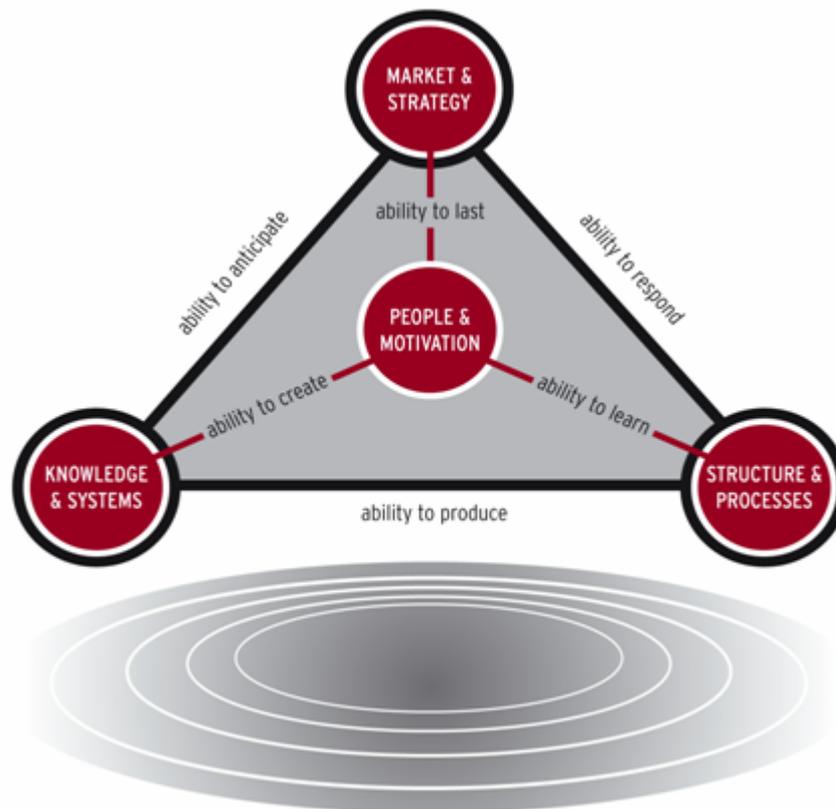
## 2. The learning ability of organisations

In order to analyse knowledge-intensive organisations, the Centre of Research in Knowledge Organisations and Knowledge Management developed a scan. This scan is based on two models. The first model represents the abilities of a knowledge-intensive organisation. The second model presents a stratification of the different learning types that can be distinguished within organisations.

### 2.1 Abilities of the learning organisation

To integrate the four key areas – Market & Strategy, Structure & Processes, People and Motivation, Knowledge & Systems - an organization needs to develop six abilities (Tissen, Andriessen & Lekanne Deprez, 1998). The level of development of each ability reveals whether or not it has reached its learning

level. Figure 1 provides a graphical representation of the model and its six abilities. Furthermore it shows how the abilities interrelate, and relate to the four key areas of an organisation...



**Figure 1:** The six abilities of a 'learning' organisation. (Source: Tissen, Andriessen & Lekanne Deprez, 1998)

The six abilities are defined as follows:

- *Ability to anticipate:* the organisation is able to anticipate (market) developments and discontinuities and respond pro-actively.
- *Ability to respond:* the organisation is able to respond swiftly to sudden external changes by entering into new partnerships and collaborations.
- *Ability to produce:* the organisation is able to manage complex processes efficiently and effectively to generate successful products or services.
- *Ability to learn:* employees within the organisation reflect on their own (work) experiences and those of others, conceptualise these experiences, discuss them, improve their plan of action, put this improvement into practice and reflect upon it.
- *Ability to create:* employees within the organisation are able to redefine internal and external reality, ask inventive questions and devise new solutions, create new designs and add value to the organisation.
- *Ability to last:* the organisation is able to bind and captivate people.

## 2.2 Types of organisations based on their learning ability

On the basis of the type of learning prevalent within an organisation, Wierdsma and Swieringa (2002) distinguish different types of organisations. A summary of their typology is provided in Table 1.

**Table 1:** Types of organisations according to their learning ability. (Smeijsters and Schoenmakers (2005) based on: Wierdsma and Swieringa (2002)).

Entrepreneurial organisation	<ul style="list-style-type: none"> <li>▪ learning by imitating</li> <li>▪ subconscious learning at operational level</li> <li>▪ rewarding and punishing</li> </ul> <p>single-loop learning (improve; rules, insight and principles are not discussable).</p>
Prescriptive organisation	<ul style="list-style-type: none"> <li>▪ organisation regulates the behaviour of staff and customers (machine bureaucracy)</li> <li>▪ focus on error prevention</li> <li>▪ learning via supply-driven training, not workplace-specific</li> </ul> <p>even single-loop learning is difficult</p>
Unlearning organisation	<ul style="list-style-type: none"> <li>▪ continuously produces new models for work processes (blueprints)</li> <li>▪ addicted to reorganisation</li> <li>▪ enforced learning process and cultural change</li> <li>▪ double- or treble-loop learning (change is necessary)</li> </ul>
Professional organisation	<ul style="list-style-type: none"> <li>▪ knowledge acquisition is driven by own expertise area (specialist)</li> <li>▪ knowledge is person-specific (expertise)</li> <li>▪ learn to prove that you are right (self-willed)</li> <li>▪ supply-driven (arrogant) service provision</li> <li>▪ focus on single-loop learning (within own 'school')</li> </ul>
Learning organisation	<ul style="list-style-type: none"> <li>▪ problem-driven learning from workplace situations (demand-driven)</li> <li>▪ focus on collaboration in knowledge creation</li> <li>▪ cyclical deepening or broadening of insights</li> <li>▪ triple-loop learning (why are certain issues tackled in a certain way).</li> </ul>

According to Wierdsma and Swieringa, 'single-loop learning' focuses on 'how' questions: how to do things better than the organisation used to do. Rules may change, but the underlying insights, theories, discourse and assumptions are not discussed. 'Double-loop learning', meanwhile, is concerned with 'why'-questions, addressing why people do things in a certain way. This is often characterised by conflicting issues and insights. 'Triple-loop learning' challenges the fundamental building blocks of an organisation, and opposes the 'presuppositions' and the dominant logic of the organisation.

### 3. The development process of the knowledge management scan

#### 3.1 Problem formulation

Over the past decades, a whole raft of so-called knowledge management scans have been developed to map out an organisation's progress towards knowledge management. These briefly comprise first generation knowledge management scans (brain drain: collate, record/capture and distribute knowledge), second generation knowledge management scans (brain chain: interactive way in which employees utilise knowledge) and third generation knowledge management scans (brain gain: promoting collaborative/joint learning) (Lekanne Deprez, 2003).

The aim of the Centre of Research in Knowledge Organisations and Knowledge Management is to develop an integrated vision and a practical approach of knowledge management that assembles the different organisational learning types and the abilities of the learning organisation.

The problem formulation is based on the six abilities as defined by Tissen, Andriessen and Lekanne Deprez (1998) and the organisation types as described by Wierdsma and Swieringa (2002). In particular, we aim to bring together both points of view, in other words to describe the organisation on the basis of a set of competencies.

The organisations in question concern both profit and non-profit organisations, drawn from the business community as well as educational and care institutions. The assumption is that it is possible to adopt a universal approach to map out the learning ability of these diverse organisations.

### **3.2 Aims and objectives**

The aim of this research project is to enable organisations to gain a clear understanding of their own overall learning ability on the basis of an integrated knowledge management scan... Once the organisation has a clear insight into its own abilities, it will be able to strengthen its overall learning ability and improve the organisations' competitive position.

### **3.3 Research problem**

#### *3.3.1 Main research question*

Is it possible to develop a knowledge management scan that enables an organisation to perform an integrated measurement of its overall learning ability and derive improvement actions to enhance its learning ability?

#### *3.3.2 Sub-questions*

The following sub-questions can be asked:

- Are the individual scan items recognised?
- Are the individual items unequivocal and not open to misinterpretation?
- Are the individual items sufficiently concrete?
- Is there a danger that the items might generate overly measured scores due to the inclusion of pros and cons?
- Are the individual items understandable to all employees at all levels of the organisation?
- In the opinion of the respondents, do the outcomes of the total scan paint a credible picture of the learning ability at the time of assessment?
- Are the respondents taking part in the scan able to differentiate between IST and SOLL situations?
- Does the scan confirm the core themes of the organisation in terms of its learning ability?
- Does the scan provide an integrated view of the overall learning ability of the organisation?
- Does the scan confirm established views, or does the scan enable new insights?
- Is it possible to determine the role of ICT in the learning organisation?
- Does the scan offer sufficient keystones to identify and select improvement actions?
- Is the scan usable in everyday practice?

### **3.4 Research process and steps**

The members of the research centre devised "items" for each ability relating to their area(s) of expertise. These items are based on the abilities identified in the Tissen-model and the organisational typologies identified by Wierdsma & Swieringa.

The items were presented to the full group of researchers during various plenary sessions and were adjusted by researchers throughout the process. These consultations also took into account the consistency of the items, such as the different abilities identified in the Tissen-model. Any duplication was omitted and gaps were supplemented. The final step involved converting the items into statements that are readily understandable to a range of employees. For each of the 6 abilities, 15 statements were devised, producing a total of 90 statements. In addition, a digital version of the knowledge management scan was produced in Excel.

The completed knowledge management scan was piloted by three departments in Zuyd University. All answers were represented graphically for each ability, and the average result of all respondents calculated. The end results were presented within each department.

The knowledge management scan was subsequently improved on the basis of the feedback provided by the respondents, advisory council of the research centre and provisional statistical analyses.

### **3.5 Research method**

The knowledge management scan was developed using a mixture of qualitative and quantitative research methods. A qualitative approach was adopted to develop consensus-based items. Quantitative research methods related to the practical application of the knowledge management scan. Employees were asked to score each item, and the scores were subjected to a statistical analysis (Berger (2001), Denzin (2000), Imbos (2001), Lincoln (1985) and Migchelbrink (2003)).

#### *3.5.1 Research types*

- Development research: developing a knowledge management scan to measure the learning ability within an organisation
- Descriptive research: with the aid of the knowledge management scan, map out the learning ability of an organisation

#### *3.5.2 Research methods*

- Qualitative (survey-based questionnaire construction)
- Quantitative (survey-based questionnaire and descriptive questionnaire construction)

#### *3.5.3 Data collection techniques*

- Desk study by researchers of the Centre to identify the key issues to be addressed within the survey
- Peer reviews within the research centre. Each member of the Centre is responsible for developing and maintain the relevant issues related to an ability
- Performing a knowledge management scan among employees

#### *3.5.4 Data processing techniques*

- Qualitative:
  - Processing comments from research centre members
  - Substantive analysis of respondents' comments
  - Processing comments of the advisory council
- Quantitative:
  - Descriptive statistics for representing the results in tables, graphs and centre sizes
  - Statistical analysis of the quality of the measurement tool

#### *3.5.5 Quality criteria*

- Qualitative:
  - Credibility (are the items recognised and seen as relevant?)
  - Dependability (have all important issues been taken into consideration?)
  - Transferability (is the scan usable in different settings?)
  - Triangulation (does the scan comprise a combination of knowledge management, abilities of learning organisations and types of organisations?)
- Quantitative:
  - Test-retest reliability
  - Inter assessment reliability
  - Internal consistency
  - Criterion validity
  - Factor analysis

### *3.5.6 Respondents*

A total of 30 representatives from three departments of Zuyd University participated as respondents in the scan tests. The respondents represented a broad cross-section of department, from top management and middle management to lecturers, project managers and mentors.

## **3.6 Results**

### *3.6.1 Qualitative*

After completing the entire scan, each respondent was asked to comment on the quality of the scan. The qualitative substantive analysis produced the following conclusions:

In general, the respondents believe that the scan paints a representative, comprehensive and integrated picture of the organisation. Important competencies relating to the external environment, internal organisation, facilities, the learning experience, innovative qualities and organisational culture are clearly present. The items cover the scope of the six abilities reasonably well.

The respondents believe that the scan represents the department accurately and confronts the respondents with relevant facts. The scan clearly reveals weaknesses, knowledge gaps and shortcomings.

Some respondents (primarily those with a higher professional education and some experience and understanding of knowledge management) reported that the majority of statements were clear and easy to answer. They are not entirely convinced however that these sentiments are echoed by other respondents, i.e. respondents from different backgrounds. Some statements require additional information and explanation. Criticism was expressed at the statements relating to ICT. The relevance of these statements in terms of focus and aims-means discussion was not entirely clear.

In general, the respondents understand what action is required to develop into a learning organisation. The scan was regarded as more workable and usable than other analysis instruments. The items in the scan are recognisable and relate to everyday practice.

Feedback of results to the organisation and further discussion is recommended. On the basis of scan results, key aims can be identified and put into practice.

The respondents are aware of the fact that the scan offers a snapshot of a change process. By conducting the scan on a regular basis, it is possible to accurately gauge the extent to which the organisation is facilitating change. Some respondents also suggested adopting the scan as a benchmark in their own sector or region.

### *3.6.2 Quantitative*

The number of respondents was too small to perform a statistical analysis on reliability and validity and draw relevant conclusions. Nevertheless, an analysis was performed to obtain some indication of the development trajectory. The test-retest reliability score was  $r = .80$  while the inter assessment reliability score was  $r = .65$ . The criterion of validity also had a comparatively high score.

Subsequent comparison of the quantitative and qualitative analyses revealed general consensus, enabling us to tentatively conclude that the degree of reliability and validity provide an adequate platform to enter the second phase of the development process: performing the scan at external companies and internally within Zuyd University departments.

## **4. Knowledge management scan in practice**

Using the experiences gleaned during the development of the knowledge management scan, the scan was performed in three various departments of Zuyd University and in the Research & Development Department of an international chemical company. In this paragraph, we examine the analysis and advisory process for one of the Zuyd University departments.

#### **4.1 Initial situation**

The department has undergone tremendous change and development in recent years. Far-reaching policy ideas have been implemented to increase the external orientation of the department, enhance involvement and facilitate decisiveness. These policy ideas have already borne fruit. Explorative discussions with members of staff and managers reveal a general consensus that the changes implemented in recent years have been for the benefit of the department... In addition, there is an overall willingness to maintain the momentum to drive through the current policy. The respondents are rightly proud of the results achieved so far. They feel strongly engaged and committed to their work and have developed good self-critical ability to assess strengths and weaknesses. Interviews with the respondents reveal a readiness to improve even further. The interviews additionally revealed the importance that respondents attach to knowledge as a production factor for the further development of the department. The employees were willing to go the proverbial extra mile to push through improvement actions. The will to improve is clearly present, although there is less certainty as to which areas deserve priority and which improvement actions are required.

#### **4.2 The analysis and advisory process**

The analysis and advisory process was preceded by an interview between research centre researchers and senior managers to discuss the analysis method to be adopted on the basis of the knowledge management scan. During these consultations, the positive and potentially negative implications of such an analysis were discussed. After carefully weighing up the pros and cons, the senior managers decided to embrace the analysis and advisory route.

The first step involved informing employees of the nature of the scan and the method to be adopted. In consultation with a senior member of staff, it was then determined which echelons of the organisation to involve in the scan to paint the most representative picture of the department.

Appointments were then made with all selected members of staff. On the basis of experiences gained during the development phase, it was decided to ask the employees to complete the scan with the researcher, rather than independently. Although this proved a rather time-consuming exercise for the researcher, it enabled him/her to explain each statement and place it in the right context. Moreover, it enabled the researcher to ask in-depth questions in key areas and to examine practical examples, context-based evidence and spontaneous responses that lend a three-dimensional quality to the analysis and advisory process.

The results of the completed digital scan were processed and subjected to quantitative analysis. On the basis of this analysis, a qualitative analysis was performed, followed by recommendations for each ability. The analysis and advisory/consultancy report was concluded with a number of general (non-competency related) conclusions and recommendations.

Once completed, the analysis and advisory report was discussed with senior management. This was followed by a staff meeting to discuss the report in more detail. The discussion focussed mainly on the points for improvement, and dedicated extra time to those items that revealed a spread across a broad score range. These mainly concerned issues that are rarely if ever discussed within the team or issues where opinions vary widely. The team as a whole handled the discussion well. Participants adopted an open approach and were interested in each other's respective points of view, and were prepared for the consequences. The group of respondents was able to relate to the conclusions and agreed to discuss implementation of the proposed improvements in more detail. Unfortunately, the process was considerably delayed due to a change of management.

#### **4.3 Results**

Per ability, the analysis and advisory report drew particular attention to statements that scored the highest (most favourably), statements that scored the lowest (least favourably, and where improvement is possible) and statements that showed the highest spread across a broad score range (where statements are subject to different interpretations or differences of opinion).

The limited length of this paper does not allow us to provide a detailed account of analysis results and recommendations per ability. Nevertheless, a summarising overview offers some insight into key points and recommendations uncovered by the analysis.

It is interesting to note for instance that the organisation's directors harbour more positive feelings about the organisation than its employees. Equally, staff members who are closely associated with or work directly in the professional field have a less positive opinion of the organisation's external orientation than other members of staff.

#### *4.3.1 Ability to anticipate*

The department is relatively aware of the importance of monitoring the external environment. There is however a lack of clarity as to whether this is the responsibility of management or the professional organisation as a whole. The vast majority of employees are sufficiently active in external networks. However, their ability to systematically search and consult external (documentary) information and data is underdeveloped. The department therefore has insufficient insight into the cause of discontinuities in the external environment. Available ICT resources are insufficiently utilised to collate data systematically.

The trends revealed by the external orientation process are neither discussed systematically within the group of professionals, nor assessed according to their relevance and importance. Annual consultations with employees (and external parties, if required) are recommended, to discuss external trends and to discuss whether and, if so, how to translate these trends into the policy of the department.

#### *4.3.2 Ability to respond*

Employees unanimously agree that they should be in a position to respond rapidly and adequately to market changes and enter into collaborations. Opinions differ as to the extent to which this aim is currently being fulfilled. Employees engaged in secondary activities outside Zuyd University have a markedly less positive view of these achievements than employees who work predominantly within the organisation. More specifically, the first group identified more collaboration opportunities with external parties through co-creation channels to reach out to the outside world through curriculum innovation and service provision.

Although a substantial number of employees is actively engaged in external networks, relatively few employees have confidence in their abilities to operate successfully in these networks. They would welcome more support. External activities are highly employee-specific; heightening the risk that knowledge acquired within the networks is not shared with colleagues, resulting in knowledge loss. A number of employees additionally commented on the fact that entrepreneurial spirit is still very much in its infancy. Adequate staff knowledge and greater delegation of authorities should enable more (manageable) risk-bearing activities. The recommendations therefore focus primarily on providing more support in developing and maintaining external networks, and on promoting knowledge exchange through the establishment of communities of practice.

#### *4.3.3 Ability to produce*

The department offers ample scope to design and structure production and service processes individually. A minority of respondents believe that greater standardisation is desirable when implementing routine activities, to free up more time for activities and work that require a higher degree of creativity.

On the whole, employees are comfortable with the level of academic innovation, but are less sure about how to approach unpredictable questions and questions from the professional field. Although external parties are involved in facilitating innovations, this collaboration is limited to assessing internally developed products. Co-creation, it is felt, could be more actively stimulated, again in accordance with the communities of practice model.

Once again, ICT appears to be the proverbial poor relation. According to respondents, (auxiliary) technology is insufficiently utilised. Respondents believe that management information generated by some ICT products is insufficiently used for policy-generating purposes. Furthermore, barely any ICT support is provided during internal or external collaborations.

#### *4.3.4 Ability to learn*

The analysis of this ability provides a clear illustration. The respondents unanimously agree that the department can be positioned as an organisation that has mastered double-loop learning and is well underway to becoming a treble-loop learning organisation. Although respondents generally agree about the learning intentions, some doubts exist as to the level of intention and form that these intentions currently take. For example, there is some disagreement among respondents as to the manner in which plans are

actually implemented. Knowledge development is predominantly a matter for each individual member of staff. Procedures to nurture knowledge within a group context are underdeveloped. Working in communities of practice would again offer a feasible solution in this respect.

Respondents indicated that they assess their competency levels regularly to assess whether these continue to reflect the changing environment. This is a positive development. Needless to say of course, the relevance of this self-reflection is hugely dependent on whether these external changes are accurately perceived.

Once again, ICT scores poorly for this ability. Although the respondents generally feel that the deployment of ICT is dedicated to improving the quality of products and services, they are less flattering about the extent to which ICT applications contribute to nurturing an individual's expertise and facilitating closer collaboration between employees and with external parties (collaborative working tools). There is a lot of territory left to explore in this respect.

#### *4.3.5 Ability to create*

The respondents virtually unanimously agree that innovations are scheduled adequately. Employees clearly feel encouraged by senior management to embrace innovation. As with the situations described above, there is some disagreement among respondents as to the extent to which external parties are involved in innovation processes. There is also lack of clarity concerning the desire to structure innovation processes according to predefined principles. The majority of employees would welcome complete freedom to implement these processes; a minority would prefer to operate according to set standards, for instance to enable validation.

Interestingly, the need for innovation is driven mostly by external changes rather than by professional developments.

Again ICT is the poor relation, and can be viewed from two distinct angles: 1) ICT facilitates the provision of new products and services, or 2) ICT supports (collaborative) processes.

#### *4.3.6 Ability to last*

This ability generally scores high. Management attaches considerable importance to personal development and employability. Employees feel empowered to self-direct. They appreciate being part of a team, and are enthused by the pioneering mentality that has been nurtured in recent years. The wheels have been put in motion, and this is widely appreciated.

Employees do not feel restricted by their job description and generally feel that personal development is in line with the organisation's expectations of its employees. Equally, employees feel that they are not forced into a procedural straightjacket.

The respondents sense that professional change necessitates far-reaching behavioural changes. These changes mainly constitute increased interaction with the external environment. The respondents attach considerable importance to this interaction. Unfortunately, this appears however to be at the expense of developing professional competence.

ICT, once again, scores poorly in this ability. ICT is being insufficiently utilised to further the employee's professionalisation and could be deployed more intensively to promote greater internal collaboration.

#### *4.3.7 Summary*

The recommendations, fleshed out in more detail in the advisory report, briefly comprise the following:

- External orientation must be embraced more systematically and the results of this orientation must be discussed within the team of professionals.
- Employees must be supervised more intensively to build and maintain networks.
- Interdisciplinary collaboration must be promoted among internal members of staff.
- Deliberate whether to introduce the "communities of practice" concept and, once this proceeds smoothly, whether to replace the current primary organisational classification (into academic years) with a primarily classification into knowledge areas.

- Involve the outside world more readily in the development and execution of academic programmes and the delivery of external services (co-creation).
- Greater standardisation of generic processes
- The deployment of ICT resources requires further exploration in virtually all areas.

#### **4.4 Evaluation**

After completing the list of statements, the respondents briefly reviewed the value of the scan. In general, the opinions described in section 3.6 were confirmed. Nevertheless, some critical notes can be added from the researcher's point of view:

- The statements offer sufficient scope to perform an analysis based on the model of Tissen et al. The researcher had more difficulty drawing unequivocal conclusions with regard to the learning level of the organisation using the stratification method of Wierdsma and Swieringa.
- Supervising the respondents to score each statement proved a time-consuming though useful exercise. It enabled the researcher to place the statements in the right context, and to ask for relevant background information to facilitate the advisory process.
- Comparison of the score analyses with other organisations (and individuals) proved difficult due to the individual norms and standards adopted by groups and individuals. For instance, individuals with high expectations of the deployment of ICT resources will not be easily satisfied with the resources provided within the organisation. Conversely, individuals with low expectations will assign a relatively high satisfaction score to the same level of resources. The researcher could absorb these differences in interpretation by providing a context description, or by highlighting the differences to reveal the broad spread of answers, enabling the organisation to discuss the different levels of perception and strive to achieve and formulate a more equal and reasoned ambition level.
- The knowledge management scan has been used on several occasions as an aid to draw up advisory reports. Experience shows that there is a growing demand to classify statements within each ability. Possible classifications could for instance include clusters of questions relating to the issues of results, preconditions and practices.
- Lastly, the scan indicates a significant demand for a 'toolbox' to draw up advisory reports. At present, the research centre has too few concrete methods and techniques at its disposal to solve knowledge management problems.

The research centre has committed itself to revising the knowledge management scan in the near future to reflect the abovementioned points. The revised scan will be performed in several organisations, and a statistical analysis will be performed to determine the validity. The research centre will additionally start putting together a 'toolbox'.

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