WIZARD : the first step from magic to wisdom : performance measurement for knowledge management activities at Philips Electronics

Meiburg, J.W.

Award date:
2000

In an economy where the only certainty is uncertainty,
the sure source of lasting competitive advantage is knowledge.

Nonaka & Takeuchi, 1995

Appendices

WIZARD

the first step from magic to wisdom

Company Confidential

Performance measurement for knowledge management activities at Philips Electronics

Author: Jan-Willem Meiburg
September 2000

Appendices

WIZARD

the first step from magic to wisdom

Performance measurement for knowledge management activities at Philips Electronics

Eindhoven University of Technology
Faculty of Technology Management
Industrial Engineering and Management Science

Student: Jan-Willem Meiburg
Id-number: 397668

Primary supervisor: Prof.dr.ir. M.C.D.P. Weggeman
Department of Organisation Science
Secondary supervisor: Prof.dr. J.A.M. Theeuwes
Department of Business Economics and Marketing
Tertiary supervisor: Dr.ir. P.A.M. Kleingeld
Department of Technology and Work

Graduation company: Philips Electronics N.V.
Corporate Quality Bureau
Groenwoudseweg 1
Building VO-p
Postbus 218
5600 MD EINDHOVEN
The Netherlands
Company supervisors: Drs. J.G.F. Wijman
Ir. A.B. Streng

Table of contents

Table of figures

Appendix 2.1 Detailed research model and plan

This appendix gives a more detailed overview of the research model. In figure A2.1 (same as figure 2.1) the research model is showed (Verschuuren and Doorewaard, 1995, Leeuw, 1996). The steps are explained in the text below.

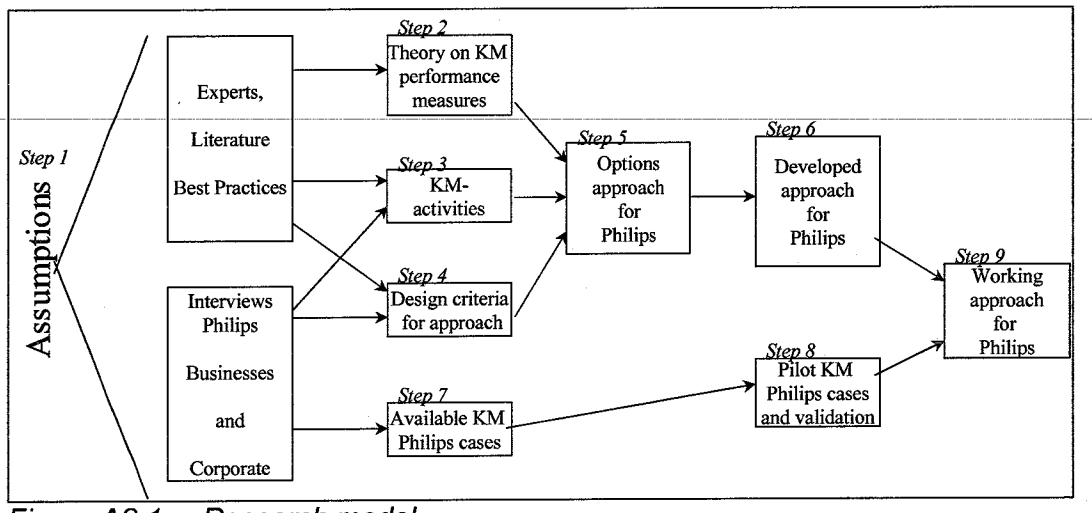


Figure A2.1 Research model

1. *Testing the four assumptions underlying the research model.*
   The assumptions contain two focuses, one is a general focus and the second is a Philips focus. To test the assumptions, both focuses have to be tested. Therefore, two tasks can be defined:

   1.1 Test the general part of assumption 1 till 3 by looking at experts view on this topic, this will be done by studying the literature.

   1.2 Test the Philips part of the assumptions 1 till 4 by looking at senior management's view on this topic. Senior management is chosen while these are the persons that decide on knowledge management initiatives and are the ones important for success of the knowledge management initiatives. Interviewing a group of stakeholders will do this.

2. *State of the art overview on the approaches for measuring performance of KM*
   Approaches for measuring performance of knowledge management activities can be found at experts (academia and consultants) and at companies measuring their KM performance. Having these places in mind, four tasks can be defined:

   2.1 Study the literature from academia and consultancy experts on existing approaches.

   2.2 Where later on in the project in depth understanding of the approaches is needed, interviews with experts will be done. These interviews will help to understand the literature better and to find all available approaches.

2.3 Study the approaches currently used by companies. This will be done by looking at publications and interviewing experts.

2.4 Analyse all these approaches and place them in areas with the same construct for measuring the performance. These consructs will help to define the options for measuring the KM performance within Philips.

3. *Define the knowledge management activities for Philips.*
To be able to define the knowledge management activities for Philips, there is a need to know what knowledge management activities are. For this step three tasks can be defined:

3.1 Study expert views on the definition of knowledge management activities. This will be done by studying their literature, while these definitions will be available in as much detail as needed in literature.

3.2 The view on the KM activities definition of the senior management of Philips has to be known, while these are the persons that have to decide on knowledge management initiatives. Interviewing a group of stakeholders will do this.

3.3 Analyse the input of task 3.1 and 3.2 and distil the different views and a common definition out of this data. This task will be executed in cooperation with Joep Wijman while he is working on the Philips approach for knowledge management.

4. *Define design criteria for the performance measures approach*
The design criteria have to define everything that is important for designing a performance measurement approach. Three tasks can be defined for this step:

4.1 Study literature for design criteria for performance measurement approaches. In the literature there will be enough detail for this purpose.

4.2 Get to know the view of the Philips senior management on their criteria for the performance measurement approach. This task will be performed by interviews with key stakeholders. The last group, key stakeholders, will be a part of the senior management of Philips.

4.3 Analyse and group the data, to come up with a list of design criteria for the performance measurement approach.

5. *Developing options for the performance measurement approach*
With step 2 till 4 in mind, several options for measuring the KM activities performance can be found. For this step two tasks can be defined:

5.1 Develop options for the performance measurement approach. These options are developed in a way that they will all have different underlying thoughts for measuring performance.

5.2 Review the approaches critically and give pro's and con's of the developed options. This will be done looking at general design criteria for performance measurement and with the characteristics of the Philips organization in mind.

6. *Chose and develop an approach*
In this step a decision have to be made what direction to go with the performance measurement system and this chosen approach have to be developed. The following tasks can be identified:

6.1 The stakeholders of Philips have to choose which option for performance measurement has to be used for further development. This task will be performed during a meeting with all these stakeholders, while during a meeting the different thoughts can be seen and be aligned.

6.2 The views of the (senior) management stakeholders on the performance measurement approach have to be known. This task needs more in depth information; interviewing these people will perform this task.

6.3 Develop the approach in more detail. This will be done by analysing the outcomes of task 6.2 and 6.3 and bring this in line with the outcome of task 6.1.

7. *Chose pilot projects*
To execute this step, three tasks have to be performed

7.1 Make an inventory of the available knowledge management initiatives. This will be done in cooperation with Joep Wijman while this is a task also done for the KM approach for Philips projects.

7.2 Chose three pilot projects. Looking at the design criteria, performance measurement evaluation criteria and the available cases, pilots have to be chosen that will test the approach in a good way.

7.3 Contact the stakeholders of the chosen pilot project to get commitment from them. The stakeholders have to be convinced of the value added for their project and they must be prepared to invest in the pilot.

8. *Test the approach in the pilot projects and validation*
For the testing phase the following tasks can be defined.

8.1 Explain the approach and find commitment in the project team. This will be done by conducting a meeting with the stakeholders of the pilot project.

8.2 Get to know the project and the project members view on performance measures for this project. This task will be done by interviewing the project members, while an in depth understanding of the project and their thoughts is needed.

8.3 Develop the performance measures for this project. This will be done in close cooperation with the project team, so the development will be done during a few meetings with the team to get a quick alignment.

8.4 Roll-out the approach for the project. In close cooperation with the team members of the project team, the measurement approach will be executed.

8.5 Evaluate the roll-out and the approach. By interviewing the team members of the pilot project, the learnings of the project will be found. The pro's and con's of the approach and of the roll-out have to be discussed here.

8.6 The tool will be tested and validated by sending out test versions and let the users evaluate the tool.

8.7 The performance indicators will be validated by discussing them with knowledge management practitioners.

9. *Fine tune approach and recommend roll-out plan*
In this last step four tasks can be identified.

9.1 Fine-tune the approach. By analysing the results of task 8.5, 8.6 and 8.7, the approach will be reviewed critically and necessary changes will be made.

9.2 Develop a rollout plan. By analysing the pilot project and with the characteristics of the Philips organization in mind, a plan can be made to introduce and rollout the approach.

9.3 Report the outcomes of the project. A report will be written about the project and meetings will be held for the Philips stakeholders for the knowledge management performance measurement approach.

9.4 Hand over the project. The project has to be finished by handing over the project to the organization. The outcomes will be hand over by the mentioned meetings and the administration will be handed over to the CQB.

Work plan

In this work plan the first part focuses on a few comments about how to execute tasks and the combining of tasks. The second part gives a work plan in time; the tasks, milestones, deadlines and deliverables are described.

How to execute

- Literature will be searched for in three ways, publications by looking in ABI-Inform (1986 till 2000), books by looking in Vubis and the internet by using a meta-search-engine (metacrawler or Copernicus). The key words used will be noted. The found literature by using key words will be checked on relevance by reading the abstracts.

- The interviews planned with the stakeholders, can be used to combine input for the following tasks: 1.2, 3.2 and 4.2. These interviews can also be used to get input for the learning history project that is conducted parallel to this project.

Time table January till September 2000

Table A2.1 Time table project

Task	Milestone	Deadline	Deliverable
Project plan		Week 5	Plan
1.1		Week 5	Input report
1.2		Week 11	Input report
2.1		Week 6	Overview lit.
2.2		Week 8	Overview
2.3		Week 8	Overview
2.4		Week 9	Report
	Report task 2	1st March 2000	
3.1		Week 6	Overview lit.
3.2		Week 12	
3.3		Week 13	Report task 3
	Report task 3	31st March 2000	
4.1		Week 12	Overview lit.
4.2		Week 12	
4.3		Week 13	Report task 4
	Report task 4	31st March	
5.1		Week 14	Options
5.2		Week 15	
	Report task 5	14th April 2000	
Intermediate report		Week 16	Report
	Intermediate report	21st April 2000	
	6.1	Week 18	Direction
6.2		Week 17	Overview lit.
	6.2	Week 18	Area definition
6.3		Week 22	
6.4		Week 25	Approach
	Report task 6	23rd May 2000	
7.1		Week 18	Overview cases
7.2		Week 18	
7.3		Week 24	
	8.1	Week 26	
8.2		Week 27	Understanding
8.3		Week 28	Performance measures
8.4		Week 32	Roll-out
8.5		Week 32	
8.6		Week 32	
8.7		Week 32	
	Report task 8	31st August 2000	
9.1		Week 33	Approach
9.2		Week 33	
9.3		Week 34	Report
9.4		Week 39	
	Concept report	30th August	
Meetings for concept report		Week 36	
	Final report	14th September	
	Graduation meeting	22nd September	

Appendix 2.2 Sounding Board

This appendix will discuss the work of the sounding board.

The sounding board has been established to have a Philips wide forum to give feedback and recommendations on the developing of the Wizard approach. The sounding board members selection is based on their openness towards knowledge management and their criticality on this approach. The sounding board members needed to be representative for the Philips community, so they work for different product divisions and in different areas.

The sounding board members are:

Reinier Gratama	Global coordinator PCE P3C	Consumer Electronics
Marc de Jong	General Manager of Special Lighting	Lighting
Gerrit Klaassen	Director corporate HRM	Medical Systems
Herbert de Kort	Head of Corporate Quality Bureau	Corporate Staff
Leo Nederlof	Innovation Manager	Semiconductors
Joep Wijman	Senior Consultant CQB	Corporate Staff

All the Sounding Board members have given input to the project at five moments.

1. Individual interview during the start-up phase (February/March 2000) to get input on the design criteria for the approach;
2. Sounding Board meeting (begin of May 2000) to make a decision on the direction of the Wizard-approach;
3. Sounding Board meeting (begin of June 2000) to give input on the developed Wizard-approach;
4. Individual feedback (August 2000) on the Wizard-tool and Wizard-approach;
5. Sounding Board meeting (September 2000) to finish the project and to make a decision on the follow-up and dissemination of the approach.

Appendix 2.3 Detailed discussion about assumptions

This appendix gives a more detailed discussion about the assumptions underlying the research model (see figure A2.1).

The research model, shown in paragraph 2.3, has some assumptions underlying it. The relevance of the research is only there if these assumptions are true. In this appendix an overview is given why these assumptions are true. The assumptions are split into a general and a Philips part; both parts have to be true. The input for the Philips part can be found in appendix 2.4 'Analysis of interview results'.

Knowledge becomes important
The first assumption says *'In the change to a knowledge economy, knowledge is becoming more and more important for technology intensive organizations and this is recognized by the Philips management'*.

In 1993 Drucker (Drucker, 1993) already stated that: '*in the new economy, knowledge is not just another resource alongside the traditional factors of production – labour, capital, and land – but the only meaningful resource today. The fact that knowledge has become the resource, rather than a resource, is what makes the new society unique'*. Nonaka en Takeuchi (Nonaka and Takeuchi, 1995) also state the importance of knowledge and argue that creating knowledge will become the key to sustaining a competitive advantage in the future. In literature a lot of other similar statements (Leonard-Barton, 1995, Weggeman, 1997, Quinn, et al., 1996) can be found. It can be concluded that this assumption in general is true.

The Philips management also states that knowledge is in general very important. On the topic which knowledge is important and how knowledge is defined, is no agreement. While the general and the Philips part of the first assumption are true, the whole assumption is true.

Knowledge management activities are needed
The second assumption says '*While knowledge is an important business asset, knowledge management activities are needed and this is also recognized by the Philips management*'.

Drucker (Drucker, 1993) implicitly says knowledge management is important by calling knowledge a resource, while resources have to be managed. If we look at the thoughts of Nonaka and Takeuchi (Nonaka and Takeuchi, 1995), they proposed a hypertext organisation and middle-up-down management and state with this that management of knowledge is needed. In addition, the rich amount of literature on the subject knowledge management shows that knowledge management activities are needed.
Looking at some surveys (Ruggles, 1998, Hacket, 1999, KPMG, 1998), the commonality is seen that a big percentage of the interviewed companies are working on knowledge management and find it important.

The interviews show that the importants of knowledge management is also recognised by the Philips management, where again no agreement on the definition of knowledge management is available. While the general and the Philips part of the second assumption are true, the whole assumption is true.

Knowledge management activities can and have to be controlled
The third assumption says '*The knowledge management activities can and have to be controlled*'.

Control of knowledge management activities, means managing of these activities. Looking at the large amount of publications and conferences about knowledge management, gives already a clue about the importance of control. Within these publications also the possibility of control is proven by the amount of management models, middle-up-down management (Nonaka and Takeuchi, 1995), knowledge value chain (Weggeman, 1997), knowledge management process framework (Bukowitz and Williams, 1999) and lots of others (Probst, et al., 1999, Tissen, et al., 1998). These same authors are also stating that the management of knowledge is important and are implicitly saying knowledge management and control of knowledge management activities have to be done. This is also proven by companies that are adopting these ideas and are controlling the knowledge management activities, for example Skandia (Skandia, 1994) and Unilever (Dale, 2000). As mentioned before it can also be found in some surveys (Ruggles, 1998, Hacket, 1999, KPMG, 1998), which show that a big percentage of the interviewed companies are working on knowledge management.

The Philips management also sees control as an important issue, while control makes the activities manageable. While the general and the Philips part of the third assumption are true, the whole assumption is true.

Return on knowledge management is important
The last assumption says '*The Philips management perceives return on implementing knowledge management activities as highly important*'.

The fourth assumption is true if interpreted as need for feedback, but the need to see financial returns immediately and directly linked to knowledge management is only seen by some respondents. The need for some form of visible return is seen by the Philips management. This proves the assumption is right, but also states that it is important to find out what the right representation of return is.

Appendix 2.4 Analysis of interview results

This analysis of interview results, gives the outcomes of the first round of interviews, which are conducted during the period February till April 2000 and had a total number of interviewees of 27. This analysis will first give an overview of the interviewees, and is followed by an overview of the used models during the interviews, than the three areas of the interview (testing of assumptions [chapter 2], identifying the KM activities [chapter 3] and design criteria for the performance measurement approach [chapter4]).

Overview interviewees

The interviewees are chosen to give a broad perspective of the thoughts on knowledge management within Philips. In the tables below, in three different ways a profile is given from the group of interviewees.

Table A2.2 Overview interviewees

Division	*Interviewees*
CE	3
Components	2
Semiconductors	5
Lighting	3
DAP	3
Medical systems	3
Origin	0
Corporate	5
Design	1
Research	2

Work area	*Interviewees*
CTO-office	5
HRM	2
Quality	5
R&D/Innovation	3
Marketing	2
Consultancy	3
Finance	2
General mgt	5

Position	*Interviewees*
Division mgt	1
BU mgt	3
Corporate staff	6
Division staff	10
Department mgt	5
Employee	2

The group is divided quite well over the different Philips areas. In the last table can be seen there is a concentration of (division) staff. This is done while these persons have a broader perspective and can give insights on this broader perspective.

Models used during the interviews

To have a reference model during the interviews in the first phase of the Wizard-project, a theoretical knowledge management model is defined. This model is based on literature and some initial interviews.
This knowledge management model needs to be a simple representation, for broad use within Philips. For this reason the model is split into two parts, the first part to visualize the '*are we doing the right things*'-question, it will be called strategic knowledge management. The second model will visualize the knowledge management primary processes and the control function for these processes also called the operational knowledge management.

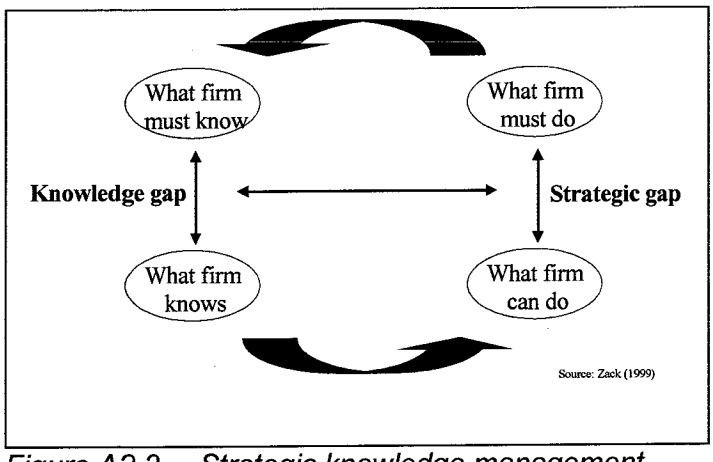


Figure A2.2 Strategic knowledge management

Within Philips the knowledge management initiatives have to be linked to the business strategy. So for visualizing the strategic knowledge management process the model of figure A2.2 is used. The model shows at the right side, the company's strategic process where the

company looks at what the company must do in the coming years to fulfil the mission and vision. From the company's strategy a translation to needed knowledge is made. Having available the knowledge inventory of the company, the knowledge gap becomes visible. With this gap the knowledge to be created is clear and the knowledge to be disposed is clear. By closing the knowledge gap, the company can execute the strategy.

The operational knowledge management process is visualized with the knowledge value chain (figure A2.3). The operational knowledge management works on closing the knowledge gap shown in figure A2.2. This representation is chosen while it is an often-used representation (inside and outside the knowledge management area) and also a well-known representation within Philips. The upper level of this representation stands for the management of the knowledge management activities. While management is enabling people to perform activities and this is also important within knowledge management (Bakema, 1999), the phrase enablers is used. The division is also used at Unilever (Dale, 2000). The lower level shows the knowledge management activities. This model also supports one of the important guiding premises of Philips, creating value with knowledge management.

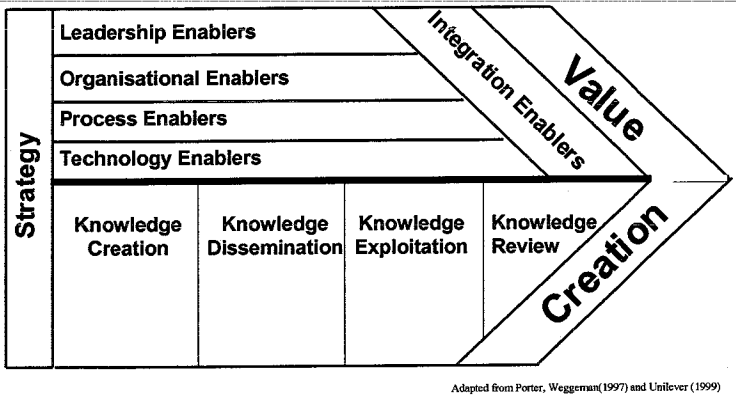


Figure A2.2 Operational knowledge management

These models were input for the first interview round where knowledge management and knowledge management measurement was explored.

Testing of assumptions

In this section the outcomes of the interview concerning the assumptions is discussed for every assumption mentioned in the project proposal.

Assumption 1

In the change to a knowledge economy, knowledge is becoming more and more important for technology intensive organizations and the Philips management recognizes this.

The first assumption is definitely true for Philips. All respondents confirm the importants of knowledge.

The definition of knowledge is a problem; the respondents see different definitions for knowledge. Skills and/or competencies are often seen as knowledge, which isn't completely the same as the definition used in this project.

The importants of technological knowledge is supported more (respondents refer to technology immediately) and secondly the importants of market knowledge is seen as important.

Assumption 2
While knowledge is an important business asset, knowledge management activities are needed and the Philips management also recognizes this.

The need for a knowledge management system is seen, but the interpretation of knowledge management is differently. Two important areas can be identified, managing the competencies and managing technology. Competencies focuses more on having people with the right skills and the second focuses more on the contents of knowledge, is the right amount of content available.

Assumption 3
The knowledge management activities can and have to be controlled.

Control must always be performed, while an area is only manageable if control is possible and done. The precise way of controlling is difficult to name for the respondents

Assumption 4
The Philips management perceives return on implementing and operating knowledge management activities as highly important.

The fourth assumption is true if interpreted as need for feedback, but the need to see financial returns immediately and directly linked to knowledge management is only seen by some respondents. The outcomes of the third part of the interviews will give more insights in the needs for seeing returns.

Identifying and defining the knowledge management activities
During the interviews two models are used to show and check the thoughts on knowledge management, the models are described on the previous page and are representing the strategic and operational knowledge management.

The respondents see knowledge management as an enabler for two areas, productivity and innovativeness. Better using of knowledge and learning are the outcomes of knowledge management that drive these two areas.

Looking at the answers on the definition of knowledge management by the respondents, implicitly and explicitly the issues the respondents are facing at are discovered, the following issues could be found:

- How to make information/knowledge available and accessible;
- How to handle the overload of information and find relevant information in it;
- How to hire the right people (competence management);
- How to overcome the *'not invented here'*, and to change the culture into a knowledge sharing culture;
- How to get people looking to other areas than there own and take interesting things from the environment;
- How to create one view on the business, so discussion is possible.

As building blocks of knowledge management are the following areas given:

- Defining the needed knowledge, technologies, competences and capabilities on time;
- Recruit the right people and perform competence management (HRM);
- Absorption of knowledge from outside the company;
- Learning and/or learning organization;
- Maintenance of existing knowledge;

- Sharing and accessibility of knowledge;
- Re-use of knowledge;
- Networking;
- Exploiting existing knowledge better;
- Leadership as a very important enabler;
- Buying of knowledge.

The model for strategic knowledge management is recognised very well by all respondents and the link with the roadmaps for technology management is made quite often. The chart must also be read as follows, that the available knowledge influences the strategy (doing business in area where knowledge is available for). Defining of the knowledge gap isn't seen as a big problem, while it's done on quite some areas yet, but defining it on time can be a problem, speeding up can be done by defining the gap earlier. Another problem lies in the commercial area, where the planning scope is shorter than in the technology area, this shorter planning scope (from around two years) gives less time for closing the gap.

The model for operational knowledge management gives more difficulties. The separate areas are recognised as important, but the model isn't seen as a practical useful model. The model doesn't address the really important issues line-management is working on. This is caused by the high-level approach (the parts of the chain must be made more practical) and while it isn't focussing on issues.
Some other important remarks were:

- The model is a push-model, while currently pull is used;
- Maintenance must be a part of the model;
- Absorption of external knowledge is missing;
- 'Doesn't give the feeling we must start tomorrow'.

Knowledge management is seen as a responsibility of the line-management. The corporate staff must support these line-managers with tools and approaches. The whole area of knowledge management must be embedded in the normal business and not handled as a separate process (a link can be made with the quality area here). The phrase knowledge management can be used, to show this is an important area.

Design criteria performance measurement approach
Measurement is seen as an important issue, while this will make the area manageable.

Three areas are identified where measurement is needed for:

1. Getting awareness, by showing cases where knowledge management helped to improve the way of working;
2. To see if the activities are working well, by benchmarking with others and see how well a group is doing;
3. To see how knowledge management adds value.

These areas are all identified for internal use.
Most of the respondents see improvement of the activities as the most important reason to start measuring the performance. As second reason to measure performance is the showing of added value. Added value doesn't need to mean showing the financial added value here, but showing reduced cycle times etc.

To show the added value and the areas where improvements are possible, mostly is referred to measures linked to business goals. Measuring outputs is than needed, while inputs are not really showing if the activities work well.

Output measurement needs to focus on productivity, where speed/cycle time and cost reductions are important sub-areas.
Measurement of innovativeness isn't mentioned as very important while it's unclear how to measure it. An easy way to measure it isn't seen by the respondents, but if possible it would be a good area to measure.

Measuring by using numbers is seen as the most effective way within Philips, while everyone is used to numbers, this will have the highest impact. The qualitative side mustn't be forgotten. The use of maturity grids is a possibility to show how well the activities are in comparison with other departments and companies.

The scope of the measurement is seen low in the organisation. The approach must be useful for projects. The possibility to consolidate the separate measures should be nice, but must only be done if this gives useful outcomes.

An important message is to keep it simple, while a complex measurement will not be used. The practical link to the business must be visible, so it will be used while it helps to solve a problem.

The described results are use for the development of the current version of the Wizard-approach

Appendix 4.1 Descriptions available KM PM approaches

This appendix gives a short description of the available approaches to measure the performance of knowledge management, as discussed in paragraph 4.2.

Economic Value Added (EVA)

The objective of EVA is to measure all ways in which corporate value can be added or lost. EVA is focussing on shareholder value and used in companies that are run in the interest of the shareholders. By using EVA a common language and benchmark is created to compare projects on the basis of value creation. EVA can be seen as a measure for knowledge management, while it can be viewed as a measure to see the return on management of intellectual capital (Bontis, et al., 1999).

Valuing intellectual capital

Intellectual capital is the difference between a company's market capital and financial capital. Intellectual capital has several sub-areas like, human capital, customer capital, process capital and innovation capital. This method tries to value the amount of intellectual capital by attaching an amount of money to the different intellectual capital areas. The increases or decreases of the amount of intellectual capital show the performance of the knowledge management processes. Knowledge management is seen here as a method to manage the intellectual capital within an organisation. Examples of methods are Tobin's Q, Strassmann's method and methods described in the report of the Dutch Ministry of Economic Affairs (Bontis, et al., 1999, Ministry of Economic Affairs, 1999, EIRMA, 1998).

Balanced Score Card (BSC), Skandia, Sveiby

Skandia is a Swedisch company, which made this measurement approach popular, while they were the first in the world to measure their intellectual capital with their 'Navigator'. This approach measures drivers for intellectual capital. It is assumed that these drivers will increase the amount of intellectual capital. This approach uses a sub-division in the same four areas as the Balanced Scorecard and Intellectual Capital, financial focus, customer focus, process focus and renewal and development focus. Skandia started publishing an intellectual capital annual report from 1994, but hasn't found many followers in the last years (Skandia, 1994, Bontis, et al., 1999, EIRMA, 1998, Edvinsson, 1997).

Dow Intellectual Asset Management

The approach Dow Chemical is following focuses on the use of the Intellectual Assets and especially at the value of patents. In a multidisciplinary team the value of a patent or family of patents is determined by using the net present value technique. This is done by focussing on the cash flow attributable to the technology protected by the patent. This results in a in figure in dollars for the patent (EIRMA, 1998, Petrash, 1996).

Knowledge Management ROI

This method of the Harvard Computing Group uses Return on Investment as measurement method for knowledge management. The method follows six stages to come to a calculation of the Return on Investment:

- Identify business goals
- Find the business opportunities
- Identify specific applications
- Measure savings from applications
- Estimate cost
- Calculate Return on Investment

The method uses financial calculations to show the added value of knowledge management applications and is best used to make investment decisions (Harvard Computing Group, 1998).

Knowledge Management Scan

Approaches like the Knowledge Management Scan (Weggeman, 1997), Knowledge Management Assessment Tool or the Information Health Index (EIRMA, 1998) are all working on almost the same way. These tools measure the strength of knowledge management in an organisation and gives areas of improvement. The outcomes are mostly a quantitative score, which gives the company's position on a certain scale. Benchmarking is possible between companies and departments.

KnowMe

KnowMe is a measurement approach the Telematica Instituut, a research institute at Twente University in the Netherlands is developing at the moment. The ambition is to develop the standard benchmark for knowledge management in Europe. The approach is developed to measure the quality of knowledge management within an organisation. The approach will combine two earlier mentioned approaches; the knowledge management scan approach to measure how well the processes are and the Balanced Scorecard/Skandia approach to measure the outcomes of knowledge management (Hendriks, et al., 1999).

EFQM excellence model

The European Foundation for Quality Management developed an excellence model, adopted by Philips as the Philips Business Excellence (PBE) model. The model is a self-assessment tool to identify opportunities for improvement and to measure progress towards business excellence. The model identifies four result areas, performance, people, customers and society, which are driven by five areas, leadership, people, policy & strategy and partnership & resources. Within the enabler areas, knowledge management can be found explicitly at some places (Philips CQB, 1999).

Cibit

Knowledge centre Cibit developed a method to measure the impact of knowledge on results. The approach can be linked to the EFQM-model and the Balanced Scorecard. The first step is to identify a business case. From this business case the result areas are identified with their key performance indicators, norms and scores. The knowledge areas are also identified. The knowledge areas are now linked to the result areas, where the current and future impact of a knowledge area on a result area is given. This can be plot to see which knowledge areas need more attention for the future. By also linking this to rate of proficiency, codification and dissemination, the focus area can be found. How to measure the impact of a knowledge area on a result area isn't mentioned in this publication (Kingma, 2000).

Human Resource Accounting

Human Resource Accounting is a measurement approach developed long before knowledge management came up. The objective of this approach is to quantify the economic value of people to the organisation. There are three sorts of models used, cost models (e.g. replacements costs), human resource value models (combining monetary and non-monetary) and monetary emphasis models (future earnings). There has been done quite some research on this topic, but due to the large amount of assumptions to make, the approach is never broadly used (Bontis, et al., 1999).

Competence Profile

Competence profiles are a measurement tool for Human Resource departments. This method uses a set of pre-defined competencies needed for a certain job or position. Interviewing or conducting a survey measures the presence of the pre-defined competencies. A competence profile is mostly input for a personal development plan.

Personal development plan

A personal development plan is a tool for the Human Resource departments. Every employee develops a development plan each year. The plan shows the competencies, which need to be developed. The progress of the competence development is measured so the plan can be adjusted each year. The plan is guidance for the employees.

Efficiency index

The efficiency index focuses on the efficiency of the knowledge utilization process. This approach defines six phases in the utilization process, acquisition, documentation, transmission, receival, knowledge perception and decision-making. The index is build from three pieces of data, delay (time from knowledge acquisition to receiver perception), process width (number of receivers) and effort (amount of human labour needed to run the process). The index divides the width by the multiplication of the delay and the effort. The index shows how much effort is made to transfer a piece of knowledge to one person (Verkasalo and Lappalainen, 1998).

Weggeman

Weggeman identifies four measures for measuring performance of his knowledge value chain. These measures are, time to market/cycle time, time to money, time to volume/learn/competence and time to get connected. Time is here the common measure, which gives indications for improvements in the knowledge management processes (Weggeman, 2000).

Appendix 4.2 Characteristics KM PM approaches

This appendix shows the characteristics of the knowledge management performance measurement approaches. The appendix has four tables, with in each table four approaches. The tables start from the next page. See appendix 4.3 for an explanation of the used characteristics.

Table A4.1 Characteristics KM performance measurement approaches part 1

	EVA	Valuing Intellectual Capital	BSC/Skandia/ Sveiby	DOW Intellectual Asset mgt
Characteristics of method				
Objective				
• Productivity				
• Innovativeness				
Target group				
• Individual				
• Department/project				
• BU				
• Shareholder/BoM				
Measurement principle				
• Stock				
• Δ stock				
• Flow/process				
• Added value				
KM processes				
• Assess				
• Build/sustain				
• Divest				
• Get				
• Use				
• Learn				
• Contribute				
Knowledge types				
• Explicit external				
• Explicit internal				
• Tacit				
Output of measure				
• Verbal diagnostic				
• Qualitative judgement				
• Quantified score				
• Benchmark				
• Financial				
Management accounting red=bad orange=medium green=good				
• Validity				
• Robustness				
• Usefulness				
• Integration				
• Economy				
• Compatibility				
• Level of detail				
• Behavioural soundness				
Characteristics of managing method				
Management				
• Self				
• Externally facilitated				
• Consultant operated				
Frequency				
• One time exercise				
• Repeated				
• Continuous				
Cost				
• Low				
• Medium				
• High				

Table A4.2 Characteristics KM performance measurement approaches part 2

	KM ROI	KM-scan	KnowMe	EFQM-model
Characteristics of method				
Objective				
• Productivity				
• Innovativeness				
Target group				
• Individual				
• Department/project				
• BU				
• Shareholder/BoM				
Measurement principle				
• Stock				
• Δ stock				
• Flow/process				
• Added value				
KM processes				
• Assess				
• Build/sustain				
• Divest				
• Get				
• Use				
• Learn				
• Contribute				
Knowledge types				
• Explicit external				
• Explicit internal				
• Tacit				
Output of measure				
• Verbal diagnostic				
• Qualitative judgement				
• Quantified score				
• Benchmark				
• Financial				
Management accounting red=bad orange=medium green=good				
• Validity				
• Robustness				
• Usefulness				
• Integration				
• Economy				
• Compatibility				
• Level of detail				
• Behavioural soundness				
Characteristics of managing method				
Management				
• Self				
• Externally facilitated				
• Consultant operated				
Frequency				
• One time exercise				
• Repeated				
• Continuous				
Cost				
• Low				
• Medium				
• High				

Table A4.3 Characteristics KM performance measurement approaches part 3

	Cibit	Human Resource Accounting	Competence Profile	Personal Development Plan
Characteristics of method				
Objective				
• Productivity	■	■	■	
• Innovativeness	■	■	■	■
Target group				
• Individual			■	■
• Department/project	■	■		
• BU	■			
• Shareholder/BoM				
Measurement principle				
• Stock			■	
• Δ stock				
• Flow/process				
• Added value	■	■		■
KM processes				
• Assess	■	■	■	
• Build/sustain	■	■		■
• Divest	■			
• Get				
• Use		■		
• Learn	■			■
• Contribute	■	■		
Knowledge types				
• Explicit external	■			
• Explicit internal	■			
• Tacit	■	■	■	■
Output of measure				
• Verbal diagnostic			■	■
• Qualitative judgement	■		■	■
• Quantified score	■			
• Benchmark				
• Financial		■		
Management accounting red=bad orange=medium green=good				
• Validity	■		■	■
• Robustness		■		
• Usefulness	■		■	■
• Integration				■
• Economy				
• Compatibility	■			
• Level of detail	■		■	■
• Behavioural soundness			■	■
Characteristics of managing method				
Management				
• Self	■	■	■	■
• Externally facilitated		■		
• Consultant operated				
Frequency				
• One time exercise				
• Repeated	■	■	■	■
• Continuous				
Cost				
• Low	■		■	■
• Medium	■		■	■
• High		■		

Table A4.4 Characteristics KM performance measurement approaches part 4

	Efficiency Index	Weggeman		
Characteristics of method				
Objective				
• Productivity	■	■		
• Innovativeness		■		
Target group				
• Individual				
• Department/project	■	■		
• BU	■	■		
• Shareholder/BoM				
Measurement principle				
• Stock				
• Δ stock				
• Flow/process	■	■		
• Added value				
KM processes				
• Assess		■		
• Build/sustain	■	■		
• Divest		■		
• Get	■	■		
• Use	■	■		
• Learn		■		
• Contribute	■	■		
Knowledge types				
• Explicit external	■	■		
• Explicit internal	■	■		
• Tacit	■	■		
Output of measure				
• Verbal diagnostic				
• Qualitative judgement				
• Quantified score	■	■		
• Benchmark				
• Financial	■	■		
Management accounting red=bad orange=medium green=good				
• Validity	■	■		
• Robustness				
• Usefulness	■	■		
• Integration		■		
• Economy				
• Compatibility				
• Level of detail	■	■		
• Behavioural soundness	■	■		
Characteristics of managing method				
Management				
• Self	■	■		
• Externally facilitated				
• Consultant operated				
Frequency				
• One time exercise				
• Repeated	■	■		
• Continuous				
Cost				
• Low	■	■		
• Medium	■	■		
• High				

Appendix 4.3 Explanation of KM PM characteristics

This appendix will discuss the characteristics used in appendix 4.2, to characterise the knowledge management performance measurement approaches. The sub-division of appendix 4.2 will also be used here.

Characteristics of method

This part is based on paragraph 5.4 of the EIRMA report the management of corporate knowledge (EIRMA, 1998).

Objective

This characteristic checks if the approach covers the two objectives of knowledge management within Philips, productivity and innovativeness.

Target group

As discussed in paragraph 4.2, within Philips four target groups can be identified. The viewpoint for identifying these target groups is the need for performance information. The four groups are, individual, department/project, business unit and Board of Management/shareholders.

Measurement principle

As discussed in paragraph 4.2, the measurement principles come from the different approaches to knowledge management.

Knowledge management processes

To be able to judge a measurement approach, it is needed to see which part of the knowledge management framework is covered by the approach. The mentioned processes are the processes of the knowledge management framework of Bukowitz (Bukowitz and Williams, 1999).

Knowledge types

This characteristic shows the types of knowledge covered with the approach, which shows for what purpose the approach can be used. Explicit external knowledge is knowledge, which is externally published knowledge like patents. Explicit internal knowledge is knowledge only published for internal use. Tacit knowledge covers the whole area of tacit knowledge, which is carried by the employees.

Output of measure

This characteristic describes the kind of output the user receives. Which goes from a verbal diagnostic to a financial measure.

Management accounting

This part is based on an article of Caplice and Sheffi (Caplice and Sheffi, 1994).

Validity

A metric is valid if it reflects the actual activity being performed and controls for any exogenous factors that are out of the process manager's control.

Robustness

A metric is robust if it is widely accepted, is interpreted similarly by different users, and can be used for comparisons across time, location and organizations.

Usefulness
A metric is useful if it is readily understood by the decision maker and suggests a course of action or direction to be taken.

Integration
A metric is integrative if it incorporates all of the major components and aspects of the process being measured and promotes coordination across functions or divisions.

Economy
A metric is economical if the benefit of tracking it outweighs the cost to collect, process and report it.

Compatibility
A metric is compatible with the existing data collection, information systems, and information flows of the firm if no significant additional work is required to install and use it.

Level of detail
A metric has the correct level of detail if it captures and reports the data in a level of aggregation or granularity to be useful to the decision maker.

Behavioural soundness
A metric that is behavioural sound discourages any counter-productive actions or game playing by those people or organizations being measured.

Characteristics of managing the method
This part is based on paragraph 5.4 of the EIRMA report the management of corporate knowledge (EIRMA, 1998).

Management
This describes the way the approach is operated, if it can be done self or that partly or full support is needed.

Frequency
This shows how often the approach is designed to run. This characteristic helps to find an approach that is in line with the current performance measurement cycle.

Cost
This shows an estimation of the expected input of resources and money to operate the approach.

Appendix 5.1 Overview of the performance indicators

This appendix gives an overview of the identified performance indicators during the Wizard-project. The definition and relevance are discussed here. The definition describes what is measured. The relevance describes why this indicator is important to measure and how it contributes to the focus area.
For an extensive and detailed discussion of the performance indicators is referred to the handbook 'knowledge management performance indicators', that's a part of the Wizard-approach, in this book for all indicators also examples and other things are available.
An overview of the performance indicators can be found in table 5.1 of the report.

KM PI 1 **Time to create new knowledge**

Definition Time in days for one person to create certain knowledge.

Relevance Time to create new knowledge shows the speed of creating knowledge by individuals and gives the reaction time needed when something new has to be created; it is a measure for flexibility. It contributes to reducing the cycle time and to speeding up innovation by focusing on time efficiency of knowledge creation.

KM PI 2 **Time to volume/competence**

Definition Percentage of the target group that has build a competence within a certain number of days

Relevance Time to volume/competence shows the speed of disseminating a new piece of knowledge and is representative for the reaction time needed to have a competence broadly operational within the company. It contributes to reducing the cycle time and improving the speed of learning by focussing on a fast dissemination of new knowledge

KM PI 3 **Time to decision to create new knowledge**

Definition Time in days from discovering a knowledge gap during the knowledge review till the decision to create the knowledge;

Relevance Time to decision to create new knowledge shows how quickly the management is reacting on a knowledge gap and gives the time needed to be able to start creating knowledge and how seriously the management is working on knowledge management. It contributes to reducing the cycle time by being ready to start earlier;

KM PI 4 **Time to decision to competence**

Definition Time in days from discovery of a competence gap during the strategic review till the decision to build the competence;

Relevance Time to decision to competence shows how quickly the management is reacting on a competence gap, giving the time needed to be able to start building a competence and how seriously the management is working on knowledge management. It contributes to reducing the cycle time by being ready to start earlier

KM PI 5	**Availability of competences**
Definition	Percentage of competences (= knowledge * number of people) that are available in the company, this is the percentage of the people with the needed knowledge available;
Relevance	The availability of competence shows the ability to execute the business strategy; while enough competences are available it is possible to make the strategic changes desired. It contributes to the cycle time and learning focus by speeding up the competence building activity and by showing the speed of learning/dissemination
KM PI 6	**Age of absorbed knowledge/information**
Definition	The age of absorbed knowledge or information is determined by the last moment of updating;
Relevance	The age of absorbed knowledge/information shows how well the age of the used knowledge or information is spread. There is learning from older knowledge and information, but new developments are taken into account as well. It contributes to the focus area learning by focussing employees on the importance of re-use of knowledge and on the importance of learning new knowledge, but only for a percentage of time learning new knowledge relevant for the business you are in;
KM PI 7	**Percentage reached PDP**
Definition	Percentage of total employees reaching their Personal Development Plan within the timeframe agreed on during the development of the PDP;
Relevance	Percentage reached PDP shows if the knowledge development desired is also reached, giving insight in how well the employees are learning. It contributes to the focus area learning by stimulating to learn the knowledge as planned
KM PI 8	**Number of missed competence gap detections**
Definition	Number of times a needed competence isn't identified in the competence-gap-analyses during the strategic review;
Relevance	Number of competence gap adjustments shows the effectiveness of the competence-gap analyses during the strategy process. It contributes to the focus area quality by improving the quality of the strategy process
KM PI 9	**Employee satisfaction**
Definition	How well and motivated feel the employees in the workplace;
Relevance	Employee satisfaction shows how motivated the employees are, this shows employee's attitude during work time. Attitude is part of the definition of knowledge, the attitude is important to have a culture of knowledge sharing, etc. It contributes to the focus area quality by improving the employee satisfaction and stimulating a knowledge friendly environment in this way;

KM PI 10 **Ability to attract talented people**

Definition Number of unfulfilled jobs;
Relevance The number of unfulfilled jobs shows how well it's going with attracting people. Assuming that the recruitment and hiring standards stay the same, it shows how well it's going in attracting talented people. While people are the knowledge carriers and users, having enough talented people is very important to be able to run the business. It contributes to the quality focus by stimulating to have enough people available to work on a high quality level

KM PI 11 **Number of patents**

Definition Number of patents an employee delivers yearly;
Relevance Number of patents shows how often new knowledge has been developed helping Philips further in the technological development. It contributes to the innovation focus by stimulating the creation of new useable knowledge;

KM PI 12 **Number of times new knowledge developed**

Definition Number of times an employee delivers new knowledge;
Relevance Number of times new knowledge developed shows how often new knowledge has been developed by an employee. New knowledge can help Philips further to be innovative and it shows the innovativeness of the employee. It contributes to the innovation focus by stimulating employees in being innovative

KM PI 13 **Network building**

Definition Number of new persons in an employees or department's network;
Relevance People are the knowledge carriers. To be able to share tacit knowledge personal contact is needed. Also innovation is stimulated by interaction with others and by interaction with other knowledge areas. For both these purposes, the number of new persons shows how innovative some one is in network building and a broader network will work positive on the innovativeness. It contributes to the focus area innovation by having a broader view on your knowledge area;

KM PI 14 **Proportion employees making new idea suggestions**

Definition New idea suggestions;
Relevance Innovation starts with an idea, while an innovation is an idea that is also successful. When all employees are making idea suggestions, all available knowledge in your unit is used for innovation. Stimulating all employees in doing idea suggestions is a powerful way to use all available knowledge within the unit. It contributes to the innovation focus by stimulating ideas that grow to innovations

KM PI 15	**Speed of strategic knowledge activities**
Definition	Percentage of work (in man-years) done after 6 months and 1 year to adjust the knowledge pool in line with the business strategy;
Relevance	Speed of strategic knowledge activities shows the speed of adjusting the knowledge pool to bring it in line with the business strategy. This shows how fast one can react to changes in the market. It contributes to the cycle time focus by improving the speed of the strategic knowledge activities

KM PI 16	**Speed of operational knowledge activities**
Definition	The average time to execute the operational knowledge activities;
Relevance	Speed of operational knowledge activities shows how fast a customer question can be handled and adjustments to learnings can be provided. It contributes to the cycle time focus by improving the speed of the operational activities and being more reactive and flexible in this way

KM PI 17	**Time to get connected**
Definition	The time from the start of a search for data, information or knowledge till the right source is found;
Relevance	Time to get connected shows how fast data, information or knowledge can be found and how long one has to wait for a piece of data, information or knowledge till the process can go on. It contributes to the cycle time focus by improving the searching capability and by being able to serve the customers more quickly

KM PI 18	**Time to get resources**
Definition	The average time needed from the recognition of a need for resources till the moment the resources are available;
Relevance	Time to get resources shows the reaction time to a change in customer demands and how fast the process can be ramped-up to serve the customers. It contributes to the cycle time focus by improving the reaction time on resource requests and being ready for ramp up earlier

KM PI 19	**Earned knowledge value**
Definition	Costs made to execute the operational knowledge activities compared with the expected costs;
Relevance	Earned knowledge value shows the efficiency of the operational knowledge activities. It contributes to the cycle time focus by keeping employees to the planned costs and keeping the expected cycle times (most costs for knowledge activities are employees, so the longer the cycle time the more costs);

KM PI 20	**Knowledge review effectiveness**
Definition	Number of times new knowledge is developed that is needed to execute the strategy, which isn't seen as needed as new knowledge in the review activity;
Relevance	Knowledge review effectiveness shows the effectiveness of the review activity, because the number of times is counted where a knowledge area is missed. If the review is correct, it is very well known what knowledge is needed to execute the strategy and the knowledge can be ready on time. It contributes to the learning and quality focus by improving the quality of the review activity to have the right input for the learning activities
KM PI 21	**Learning**
Definition	Percentage of times an operational business cycle has an evaluation and learning part in it;
Relevance	The learning indicator shows how often the learning activity is performed by evaluating the search/absorb and apply/re-use activities of the business process. The number of times evaluation is done shows how serious learning is taken. It contributes to the learning focus by stimulating an evaluation and learning phase in every business cycle;
KM PI 22	**Re-use of knowledge**
Definition	The percentage of knowledge re-used for a product or solution;
Relevance	Re-use of knowledge shows how well is learned from others by re-using their solutions in a product. It also shows if the "not-invented-here-syndrome" is present or not, where re-use is most of the times cheaper than re-inventing. The efficiency will be higher by re-using as much as possible. It contributes to the learning focus by improving the learning from others and stimulating the re-use of knowledge
KM PI 23	**KM marketing**
Definition	The budget available for marketing/promoting the knowledge activities and results;
Relevance	KM marketing shows what is done to promote the KM-initiatives and to improve the use of knowledge. It contributes to the learning focus by improving the awareness of the importance of (re-use of) knowledge and learning;
KM PI 24	**Contribution to knowledge bases**
Definition	The number of times an employee has a contribution to a knowledge base;
Relevance	Sharing and re-using of knowledge are two important things to make knowledge management work. To be able to share and re-use knowledge, it's important that the knowledge is made explicit. Contributions to knowledge bases (or other knowledge carriers) are very important in this case. It contributes to the learning focus by improving the availability of knowledge that can be shared and is a stimulation of the input side of knowledge management

KM PI 25 **Reliability of data and information**

Definition The number of complaints about unreliable data or information;

Relevance Reliability of data and information shows whether sources are reliable or not. This shows the quality of these sources and the quality of the process and activities used by these sources. It contributes to the quality focus by improving the reliability of the data and information and this will reduce the number of complaints

KM PI 26 **Information maintenance**

Definition The time between the last up-date of data, information or knowledge and the measurement moment;

Relevance The time from last up-date mustn't be too long in order to keep guaranteeing the reliability of the data, information or knowledge. In this way the latest version can be used knowing it contains the best data, information or knowledge there is at that moment. It contributes to the quality focus by assuring data, information or knowledge is up-dated on a regular bases

KM PI 27 **Competence maintenance**

Definition The time between the last training of people in a certain competence area and the measurement moment;

Relevance The time from the last training mustn't be too long in order to keep guaranteeing the reliability of the competence. In this way it is known the knowledge is still up-to-date. It contributes to the quality focus by stimulating to train employees on a regular bases and guarantee the competence is up-to-date

KM PI 28 **Training maintenance**

Definition The time between the last up-date of the training contents and the measurement moment;

Relevance The time from last up-date mustn't be too long in order to keep guaranteeing the reliability and relevance of the training. In this way it can be used knowing it is the best there is at that moment. It contributes to the quality focus by assuring the training is up-dated on a regular bases and guarantee the training is up-to-date

KM PI 29 **Tool availability**

Definition Percentage of planned tools that are available;

Relevance To be able to execute the business process, tools need to be available to support it. If the tools are not available the knowledge activities will not perform in the way they are supposed to do. It contributes to the quality focus by improving the support given to knowledge workers in performing their tasks. The quality and efficiency of the knowledge workers will improve by having the tools available

KM PI 30	**Source spread**
Definition	The percentage of the collected knowledge searched for and found within the own product division, other product divisions of Philips or outside Philips;
Relevance	Source spread shows whether people are innovative and perform their searching activities only within their own surroundings or outside their own surroundings as well. Using enough external sources enlarges creativity and innovativeness. It contributes to the innovation focus by stimulating employees to use besides the internal sources, external sources as well
KM PI 31	**Time to new idea**
Definition	The time between two marketable ideas of an employee or of a department;
Relevance	Time to new idea shows how innovative the person or department is and how effective this innovativeness is. It contributes to the innovation focus by stimulating employees to be innovative and come up with new ideas;
KM PI 32	**Number of delivered Best Practices**
Definition	The number of times an employee or department delivers a Best Practice;
Relevance	Sharing and re-using of knowledge are two important things to make knowledge management work. To be able to share and re-use knowledge, it's important that the knowledge is made explicit. Writing and sharing of Best Practices is a good way to do this. Stimulating the delivering of Best Practices contributes to the learning and innovation focus by improving the availability of knowledge that can be shared and is a stimulation of the input side of knowledge management. The Best Practices are also input for finding innovative solutions for problems
KM PI 33	**Ratio new ideas generated and new ideas implemented**
Definition	Percentage of new idea suggestions that are also implemented;
Relevance	Generating new ideas is important to be innovative, but a new idea is not an innovation. An idea becomes an innovation if it is also successful. A successful idea will be an idea that is implemented. Measuring the percentage of successful ideas, helps to make the quality and innovation power of the ideas bigger. This measure contributes to the innovation focus, by stimulating to be innovative and share good ideas for improvements

KM PI 34 **Speed of customer process**

Definition The time needed to perform the customer part of the business process (the knowledge activities searching & absorbing and applying & re-using);

Relevance Speed of the customer process shows the speed of the customer part of the business process, showing the speed of handling and answering a customer question and the speed of having relevant knowledge available. It contributes to the cycle time focus by improving the reaction time to customer questions and in this way customer satisfaction

KM PI 35 **Earned customer value**

Definition The cost made to execute the customer knowledge activities compared to the expected costs;

Relevance Earned customer value shows the efficiency of the customer focused knowledge activities. It contributes to the cycle time focus by keeping employees to the planned costs and keeping the expected cycle times (most costs for knowledge activities are employee costs, so the longer the cycle time the higher the costs).

KM PI 36 **Number of repeat complaints**

Definition The number of customer complaints repeated after 6 months of coming in for the first time;

Relevance Number of repeat complaints shows if the cause of the complaint is solved in the mean time and in this way if something is learned from the complaint and if these learnings are applied. It contributes to the learning and quality focus by improving the speed of learning and resulting in a better quality of the products

KM PI 37 **Number of repeat field calls**

Definition The number of field calls repeated after 6 months of coming in for the first time of the same field call;

Relevance Number of repeat field calls shows if the cause of the field calls is solved in the mean time and in this way if something is learned from the field calls and if the learnings are applied. It contributes to the learning and quality focus by improving the speed of learning and resulting in a better quality of the products

KM PI 38 **Knowledge user complaints**

Definition The number of complaints about delivered knowledge (for example knowledge in databases or Best Practices);

Relevance Knowledge user complaints show the quality of the delivered knowledge and how well it fits to the question of the receiver. It contributes to the quality focus by improving the knowledge delivered to customers

KM PI 39 **Knowledge user satisfaction**

Definition How satisfied are the users of your knowledge with the delivered knowledge;

Relevance Knowledge user satisfaction shows how well you do in delivering the right knowledge at the right time to the customers of your knowledge activities. It contributes to the quality focus by improving the quality of the delivered knowledge and by improving customer satisfaction

KM PI 40 **Field call rate**

Definition Product field call rate;

Relevance How well is customer knowledge used to adjust products and reduce the field call rate in this way by learning. It contributes to the quality and learning focus by improving the quality and by this means stimulating the learning from customers

KM PI 41 **First time resolution**

Definition Percentage of times a customer request is handled right at once;

Relevance A customer is more satisfied if his or her request is handled right at ones and handling a request only ones is more efficient. It contributes to the quality and cycle time focus by improving the quality of the customer knowledge activities to handle the question right at ones and reducing the cycle time by having less re-work;

KM PI 42 **% new customers**

Definition The number of customers that came to the customer-base during the last year compared with the total amount of customers;

Relevance Percentage new customers shows if the department or BG is using market information to get new customers in. This shows how innovative they are in contracting new customers. It contributes to the innovation focus by improving the innovativeness in the sales and marketing processes

KM PI 43 **Percentage customers with repeat business**

Definition The percentage of the customer base that is in this base for more than one year and that is still ordering products;

Relevance In this rapidly changing environment, being innovative is important. If no new products or solutions are delivered, the competition takes over your customers. By being able to keep a big percentage of the customers in the knowledge base, shows that the unit is innovative enough to stay on track with the competitors

KM PI 44 **Percentage new products succeeded in the market**

Definition The proportion of products introduced in the market that are a success;

Relevance The success of the innovations and developments can be seen by the success in the market as well as the success of the marketing of the products (depends on innovative way of working in the marketing area). The measure shows the contribution to the innovation focus.;

KM PI 45	**Time to money**
	Best useable in areas where knowledge is the product
Definition	Time between the decision to create knowledge and/or to built a competence, till the moment the investments in the competence area are earned with using the competence;
Relevance	Time to money shows the speed of marketing a new competence, from the moment an opportunity is seen till money is made. It gives insight in how long the knowledge creation, competence building and making business with the competence takes. It contributes to the cycle time focus by improving the time to market by speeding up the knowledge activities
KM PI 46	**Savings of operational knowledge activities**
Definition	The total financial savings of the last year, coming from improving the operational knowledge activities;
Relevance	Financials are easy to understand and very easy linkable to the company goals. By having a focus on savings of improving the operational knowledge activities, everyone is focused on efficiency and effectiveness of the knowledge activities. It contributes to the cycle time focus, by stimulating reduced cycle times;
KM PI 47	**Cost of competence building**
Definition	Cost made per person to build the competence;
Relevance	Cost of competence building shows how efficient a competence is build. It shows how well the company is in building a competence and gives insight on the responsiveness and flexibility of the company. It contributes to the learning focus by improving the efficiency of the learning activities
KM PI 48	**Savings by knowledge re-use**
Definition	Cost saved by re-using knowledge and solutions instead of developing it;
Relevance	The savings will focus everyone on the importance of re-using knowledge. If the savings of re-using are visible, it is extra stimulating the sharing and learning from each other. It contributes to the learning focus by stimulating sharing and learning
KM PI 49	**Reduction in cost of quality**
Definition	Reduction of the cost made for customers to solve problems with products;
Relevance	Cost reduction in this area shows that there is learned from the feedback of customers and that these learnings are applied. It contributes to the quality and learning focus by improving the quality and stimulating learning from customers

KM PI 50	**KM budget availability**
Definition	The percentage of the budget spent on activities to improve the use of knowledge;
Relevance	KM budget availablility shows the importance given to knowledge within the department or BG and gives an indication why the knowledge management performance indicators are good or bad. It contributes to the quality focus by improving the quality of the knowledge activities

KM PI 51	**% sales earned with new knowledge**
Definition	Percentage of sales earned with products based on knowledge marketable for the last year only;
Relevance	Percentage sales earned with new knowledge shows how well new knowledge is used in the marketplace where in this age the competition is based on knowledge. It contributes to the innovation focus by improving the creation of new useable and marketable knowledge

KM PI 52	**Earned with spin-off and divestment of knowledge**
Definition	The money earned with spinning-off or divesting knowledge;
Relevance	Earned with spin-off and divestment of knowledge shows how well the knowledge that is not needed anymore is marketed, while this knowledge often has quite some value for others. It contributes to the innovation focus by improving the innovativeness in the strategy process

Appendix 5.2 KM performance indicators maturity profile

As discussed in paragraph 5.3, a maturity profile is used for the performance indicators for knowledge management. The maturity profile makes the performance measurement more objective and better comparable. The maturity profile for all identified indicators are defined in the extension to appendix 5.1. For these definitions the general definition of the maturity levels is used as shown below (Brombacher, 1998, Wijman, 1998).
In these definitions, with area is mentioned the area measured with the indicator

The five levels used are innocence, awareness, understanding, competence and excellence. These levels are based on a maturity profile already in use at Philips.
The description is based on: Recognition of value
Availability of objective, strategy and indicators
Performance
Ownership
Linking to other areas

Innocence: *Of no value to us*
The value of this area is not seen by the business and so the objective and performance of this area is unknown. This area is seen as an area only interesting for KM/HRM/Quality and is not linked to other business areas

Awareness: *Value only seen in KM/HRM/Quality area*
There is worked on this area to please the KM/HRM/Quality department. Objective and strategy are known within the KM/HRM/Quality departments, the performance is known on gut feeling. The area is seen as an area mostly interesting for KM/HRM/Quality and is ad-hoc linked to other business areas.

Understanding: *Value is seen and performance measured*
The value of the area is recognized and the area is seen as supportive in reaching the goal of the focus area (cycle time, learning, quality or innovation). Objective, strategy and indicator targets are known by key departments and managers; the performance is measured on key indicators. The area is seen as an area interesting for key departments to support in reaching goals. The area is linked to the short term planning of the business.

Competence: *Area is important and performance is at average of benchmark*
The value of the area is recognized and the area is seen as important in reaching the goal of the focus area (cycle time, learning, quality or innovation). Objective, strategy and indicators are known by departments and managers; the performance is measured on key indicators and controlled. The area is seen as an area interesting for all departments to support in reaching goals. The area is linked to the planning of the business. The performance is at the average of a relevant benchmark.

Excellence: *Area very important, performance within top 10% of benchmark*

The value of the area is highly recognized and the area is seen as very important in reaching the goal of the focus area (cycle time, learning, quality or innovation). Objective, strategy and indicators are well known by departments and managers; the performance is measured on a broad set of indicators and controlled. The area is seen as an important area for all departments to support in reaching goals. The area is linked to the strategic planning of the business. The performance is within the top 10% of a relevant benchmark.

Appendix 6.1 Pilot descriptions and set-up

This appendix gives a description and the set-up of the three pilots used to test the Wizard-approach. For a more extensive description of the pilots and the results is referred to the Wizard-tool and the examples in the tool.

Apollo-project / P3C

The Apollo-project has been executed at the Philips Customer Care Centre (P3C) activities for the Consumer Electronics division. The P3C mission is to create and sustain consistent global world-class Customer Care Services by providing direct links, reflecting local culture and offering one Philips face to the Consumer on behalf of the Business. From this mission the purpose can be extracted and is stated as supporting the Philips Global Brand Management Programme by providing leading edge communication and information services to the Consumer and the Philips Business.

P3C works on this task by operating 11 call centres around the world to handle the consumer calls, letters, faxes and e-mails. These call centres are outsourced (see figure A6.1) by P3C. The Philips businesses buy-in the consumer service at P3C.

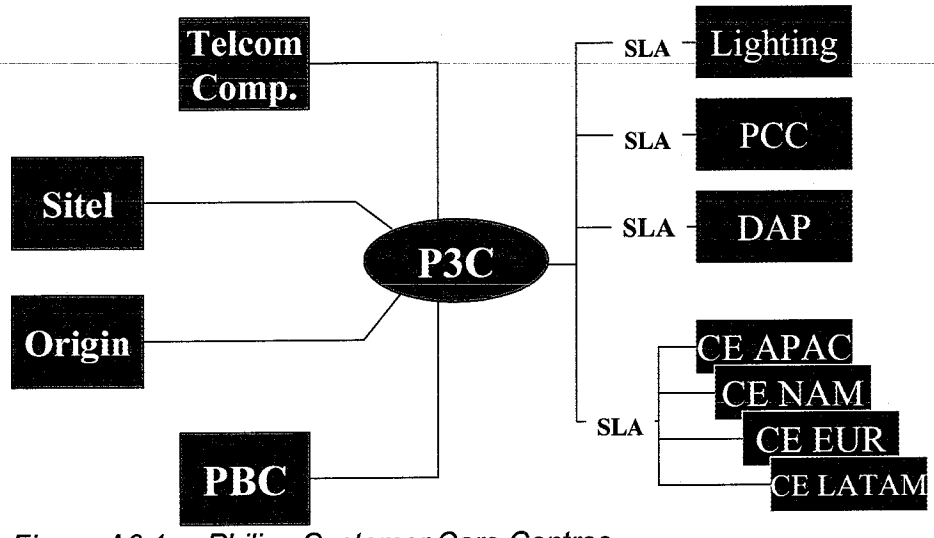


Figure A6.1 Philips Customer Care Centres

To be able to handle all the calls, the business supports the call centers by giving them all kind of information, brochures, leaflets, etc. One of the most expensive parts are the knowledge bases, meant to handle after sales problems that have to do with the use, installation or malfunctioning of the product. These knowledge bases are build by a group of knowledge engineers at the Consumer Electronics businesses. The knowledge engineers make problem-solving trees that can be used by the call center agents.
The calls handled by the call center are registered in a database. P3C has a reporting tool (web based) that can be used by the business to get consumer feedback. With the consumer feedback, there can be worked on improvement of products and concepts.
A representation of the operations of P3C can be found in figure A6.2.

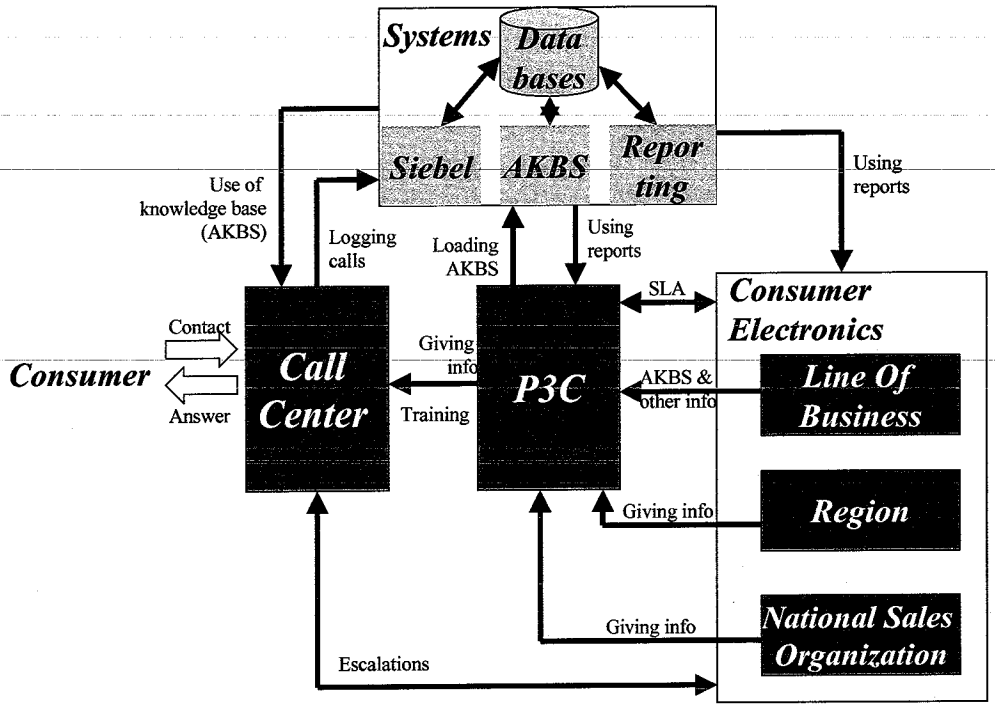


Figure A6.2 Operations of P3C

The Consumer Electronics division had at the begin of the year 2000 the problem that operating the P3C activities is very expensive and the awareness was very low. The benefits of P3C, having of higher customer satisfaction, lower cost and better feedback for marketing and product management, weren't visible either.

The Apollo-project was set-up to support Consumer Electronics in developing a set of performance indicators to show the benefits of the P3C activities. Especially a focus was on the knowledge base development and the feedback process.
Initially the scope was the VCR-business for the Netherlands, which was chosen for easiness, while all stakeholders were close together. This is later on expanded with the VCR-business for Germany, while for the Dutch market some IT-system problems occur.

The project has been set-up in three phases.

1. Initial phase, getting familiar with the P3C-organisation and way of working.
2. First measurement phase, during this period P3C start with their own measurement, this is followed critically. Consumer Electronics and P3C give input to the Wizard-project;
3. Second measurement phase, the Wizard-approach is used at P3C, to develop a measurement approach. The indicators are developed during a meeting with the stakeholders. The developed indicators are measured, reported and reviewed.

Display FactBook

The Display FactBook is a project of the CTO-office (technology office) of Philips Display Components (displays for computers, televisions, etc). The components division is supplier for the high volume electronics (HVE) businesses that are mostly positioned at the consumer electronics division.
The CTO-office is doing the technology planning and needs to have a long-term view on the business. The technology planning is based on technology developments, price developments and market developments. The trends in these areas will define the market potential of the several technologies and market segments.

During the planning it used to be that several information sources were used and that the planning of different technology areas was contradictory. This caused a lot of not needed discussion on the reliability of data and planning.
To improve the updating and validation of the used data, to have a process for the continuity of the updating and validation and to have a tool to make the use easier and the data broader accessible, the FactBook was developed.

The objective of the FactBook is to become the platform to:

- Make the best available knowledge on display applications, technologies and industry easily accessible for the Philips HVE community;
- Enhance information sharing and discussion within the HVE community based on common language, standard methodology and one set of data, with assumptions, uncertainties and white spots made explicit;
- Reduce the amount of work by integrating FactBook procedures into existing ways of working;
- Enable the HVE community to focus on analysis rather than fact finding;
- Provide overview as well as detailed insights on specific issues;
- Enhance capability to identify issues and evaluate opportunities in an early stage;
- Create a strong basis for technology portfolio management and event-driven decision-making on emerging display technologies and applications.

The FactBook covers the display technology areas as well as the display application areas and an industry base. The data is coming from the technology as well as the marketing area. The FactBook is the basis for the scenario planning of Display components and building of display roadmaps.

This pilot has been set-up in three steps:

1. Initiating, getting familiar with the Display FactBook by having some meetings with the contact person;
2. Development, having a meeting with a group of stakeholders, using the Wizard-tool and approach to develop a set of performance indicators;
3. Evaluating the pilot project.

Philips Yellow Pages

One of the Octagon outcomes was to make a Philips wide platform to share knowledge. While by sharing knowledge not only the knowledge is important but also or even mostly the source, Yellow Pages is based on bringing people together. The Yellow Pages system is linked to the e-mail system and worldwide useable for all Philips employees. When someone joins the Yellow Pages, a personal file is made where your working area, experience and interest are registered.
When you are looking for a certain topic, you can use the Yellow Pages in the same way as the Yellow Pages book. Search for the topic you are looking for and persons experienced on that topic will come forward. Also Best Practices and managed

networks are available in the tool. By using an expire dates and e-mail warnings, the members do the content maintenance themselves. If a file isn't updated for a year it is deleted from the system and every 6 months an up-date request is send to the members.

The difficulty for Yellow Pages is to show the results of the tool. To keep the budget for maintenance, expansion and marketing of the Yellow Pages on track, the results need to be shown. For this purpose a pilot has been set-up in the same way as at the Display FactBook,

1. Initiating, getting familiar with the Yellow Pages by having some meetings with the contact person;
2. Development, having a meeting with the stakeholders, using the Wizard-tool and approach to develop a set of performance indicators;
3. Evaluating the pilot project.

Appendix 6.2 Testing of the Wizard-tool

This appendix shows the set-up of the testing of the Wizard-tool and the Wizard-approach by individuals. The group of testers is asked to give feedback on the content of the Wizard-approach, the usefulness of the approach (would it help them) and the easiness of use of the Wizard-tool.

Distributing test versions of the Wizard-approach has two objectives:

- Get feedback on the Wizard-approach and Wizard-tool on the content, the usefulness and the easiness of use;
- Building awareness for knowledge management and the Wizard-approach as first step of the implementation phase.

First test round

Test the approach with people working on knowledge management initiatives and being already familiar with knowledge management. This test will take place week 29 till week 31 (deadline for feedback 4th August).

1. Aad Streng	Yellow Pages/Corporate Quality Bureau
2. Arend Jan van den Beld	Philips Customer Care Centres
3. Henk de Vries	Semiconductors
4. Marc de Jong	Lighting
5. Rene van Loon	Lighting
6. Pablo de la Torre	Domestic Appliances and Personal Care
7. Jeroen Frumau	Design
8. Johan ten Hoor	Corporate Strategy
9. Joep Wijman	Corporate Quality Bureau

These people will be actively asked for feedback.

Second test round

Test the approach at a broader group of people, making sure the approach is accepted by a broad audience. This test will take place week 34 till week 36 (deadline 8th September).

1. Herbert de Kort	CQB and Sounding Board
2. Reinier Gratama	P3C and Sounding Board
3. Leo Nederlof	Semiconductors and Sounding Board
4. Gerrit Klaassen	Medical Systems and Sounding Board
5. Andre Rotte	Design
6. Bert Tuyt	Components
7. Ivo Mannaerts	Research
8. Jelto Smits	Corporate Strategy
9. Volker Rohde	Medical Systems
10. Cees Bouw	Corporate Finance

Final release

The final release will be developed in week 37 and 38 and released on the 22nd of September 2000. This final release will be send to all people that have been approached during the Wizard-project and to people known to be working on knowledge management. This final release will be used as implementation step of the Wizard-approach, while sending out quite some copies will help to make people become aware of this new tool.

Appendix 6.3 Validation meeting performance indicators

This appendix shows the set-up of the validation meeting held to validate the knowledge management performance indicators.

Objective
Validate the definition, relevance, specificity, usability and impact of the in the Wizard-approach proposed performance indicators and add indicators as appropriate.

Definition:	is the definition clear and concise?
Relevance:	is the indicator measuring the contribution of knowledge management to business performance and objective?
Specificity:	does the indicator measure the specific contribution to the business performance and objective?
Usability:	is the indicator operational and practical?
Impact:	what is the relative importance of the indicator in comparison to the other indicators?

Set-up of validation
A meeting of three hours, using a group-system-tool. The participants need to be prepared and get the information needed early enough. The participants are asked to make a list of missing indicators during the preparation and write their comments on definitions and other text in the preparation document.
Due to time restrictions the comments on the definition and specificity cannot be discussed with the whole group, these comments are processed after the meeting.

The agenda of the meeting:

- Introduction, with objective of the meeting and background of the Wizard-project (15 min.);
- First validation round (75 min.). The participants are asked to rank the relevance of the indicators for each cell of the overview table (table 5.1 of the report). The questions:
  - Choose maximum the two most relevant indicators, where relevant means showing as best the contribution to the performance of knowledge management and the indicator result can be used to adjust the knowledge management strategy and activities.
  - Choose the indicators that are not showing the contribution of knowledge management and that can better be skipped from the list of indicators
- Second validation round (60 min.). The participants are asked to rank the relevance and usability (can it be made operational) of the indicators for each focus area, for this part only the relevant indicators of the first round are used. The questions:
  - Rank each indicator in this focus area on a scale 1-5 for relevance (irrelevant, nor relevant or irrelevant, relevant, very relevant, highly relevant).
  - Rank each indicator in this focus area on a scale 1-5 for usability (very difficult, difficult, nor difficult or easy, easy, very easy).
- Discussion on indicators with a very low consensus

Participants

1.	Cees van der Elst	Knowledge Management department Unilever
2.	Aad Streng	Corporate Quality Bureau
3.	Jeroen Frumau	Design
4.	Bert Tuyt	Components
5.	Piet Bosman	Lighting
6.	Henk de Vries	Semiconductors
7.	Mathieu Weggeman	Eindhoven University of Technology (not during meeting, but feedback is given in same way)

Appendix 6.4 Pilot results

This appendix describes the results of the pilot projects. For the three projects the slides that are used are reproduced here.

Apollo-project / P3C

Knowledge management focus P3C

The activities focus on improving the QUALITY

especially
- improving the quality of the service to the end-consumer
  - *Giving better and faster response to complaints*
- improving the quality of the feedback / reporting
  - *To improve the product quality with the consumer data, the reporting tool used to give the feedback to the innovation are need to be of good quality (this is the only area that can be influenced by P3C)*

Let's make things better PHILIPS

KM activities (1)

Strategic review
- Decision which knowledge and information needs to be available in the call centers
- Decision which feedback (reports) need to be available for the business
- Training of agents and knowledge engineers (they build the knowledge bases)

Let's make things better PHILIPS

KM activities (2)

Operational business process
- Searching for knowledge at the innovation and marketing department
- Building the Knowledge Base
- Placing the Knowledge Base in the call center
- Using the knowledge base by the agents
- Using the reporting tool for feedback

Let's make things better PHILIPS

KM ambition

The chosen ambition level is level 5

The key indicators will be measured to show the contribution of PCE customer care to
- *servive quality*
- *feedback quality*

Let's make things better PHILIPS

KM performance indicators

- Service quality
  - *The right answers* >customer satisfaction survey
  - *One phone call* >first time resolution
  - *Shortest time as possible* >call duration
  - *Friendly answered* >customer satisfaction survey
- Feedback quality
  - *Reporting tool based on needs (not on system capabilities)* > survey and number of logons
  - *User-friendly environment* > reporting users satisfaction

Let's make things better PHILIPS

Targets of performance indicators

	TARGET
Service quality	
% right answered (from survey)	survey targets
First time resolution	SLA target
Call duration (time and customer perception)	SLA / CUSAT target
% friendly answered (from survey)	survey target
Feedback quality	
Number of logons (number of people and number of different people)	set after measured
% find reporting user-friendly	80% satisfied

Let's make things better PHILIPS

Effect of indicators

Dashboard

How will people react?
- Taking action and try to improve
- Defining feedback needs

Is this the behavior desired
- Yes

Let's make things better PHILIPS

Is it possible to measure the indicators? (1)

Dashboard

- Indicators can be measured by using the reporting tool
- Number of logons need to be checked if available, elseway arrange it
- Reporting satisfaction survey need to be made, will be done by AJ and JW

Let's make things better PHILIPS

Is it cost effective to measure the indicators? (2)

Dashboard

- Yes for all

Let's make things better PHILIPS

How are we going to measure the indicators? (3)

Dashboard

- Using the reporting tool of P3C
- Sending out a reporting satisfaction survey by e-mail

Let's make things better PHILIPS

Are tools, investments or adjustments needed? (4)

Dashboard

- Logons of reporting tool need to be captured, software need to be placed if needed
- Survey need to be developed and conducted

Let's make things better PHILIPS

Who is going to measure the indicators? (5)

Dashboard

- AJ
- JW

Let's make things better PHILIPS

How often are we going to measure the indicators? (6)

Dashboard

- Measurement will be monthly

Let's make things better PHILIPS

Review plan for first review

Dashboard

- Week 29 - 31 preparing performance report
- 4th August distributing report
- 11th August conference call to review performance and to discuss actions

Let's make things better PHILIPS

Display FactBook

Knowledge management focus

- Share knowledge
  - *Explicit knowledge/information*
  - *Tacit by building a network of experts*
- Starting point decision making
- The FactBook needs to contribute to the decision making:
  - *Doing it faster*
  - *Giving better decisions*

Let's make things better PHILIPS

The strategic KM activities

- Decision on new use
  - *Using the Factbook tool and processes for a whole new area within Philips*
- Decision on adding new fields and/or markets to the Display FactBook

Let's make things better PHILIPS

The operational KM activities

- Use
  - *The use of the Display FactBook within the Philips organization*
- Maintenance
  - *Scoping*
  - *Data collection*
  - *Validation*
  - *Consolidation*
  - *Publishing*

Let's make things better PHILIPS

KM ambition

- Having a clear objective and strategy
- Having the key indicators clear
- Measuring the key indicators

Let's make things better PHILIPS

KM performance indicators (1)

- Measuring the contribution of the FactBook to faster and better decisions isn't possible (output measurement)
- Measuring the input to the decision process can be measured, is it used, are the Facts used up-to-date and is there consensus on the Facts

Let's make things better PHILIPS

KM performance indicators (2)

- How often uses someone the factbook
  - *Are people using the FactBook, elseway other outcomes will not be visible*
- What pages are viewed
  - *This will help to know what areas are the most important, good input for decision on maintenance and adding of new areas*

Let's make things better PHILIPS

KM performance indicators (3)

- Number of workshops
  - *The workshops are needed to get consensus on the facts, to up-date the FactBook and to having maximum sharing*
- Everyone only uses data from the FactBook (not other data)
  - *While there is consensus on the FactBook data all decisions must be based on it*

Let's make things better PHILIPS

KM performance indicators (4)

- Input process part of normal job
  - *If the work done for the FactBook is not a part of the daily work two problems can exist:*
    - Knowledge gathered for FactBook is not relevant
    - In this area benchmarking is never done, should be part of normal job
- Time saving by using the FactBook
  - *What are the areas you save effort by using the FactBook or the FactBook network*

Let's make things better PHILIPS

KM performance indicators (5)

Output measures:

- Is your knowledge level improved
  - *Helps the sharing of the FactBook*
- Is your network broadened
  - *Helps the contacts brought by the FactBook*
- Is decision taking improved (speed and/or quality)
  - *Is a contribution to the overall objective seen*

Let's make things better PHILIPS

Targets of performance indicators

- Targets are not set at the moment while no references are available
- In this stage of the project, targets will work contraproductive

Let's make things better PHILIPS

Is it possible to measure the indicators? (1)

- All indicators need to be measured by using a survey
- The frequency of use and the viewing behaviour of on-line users can be measured electronicly

Let's make things better PHILIPS

Is it cost effective to measure the indicators? (2)

- Using a survey is costly, it takes all users some time

Let's make things better PHILIPS

How are we going to measure the indicators? (3)

- Survey for all indicators
- IT for frequency of use and for viewing behavior (only used complementary to the survey results in this area)

Let's make things better PHILIPS

Are tools, investments or adjustments needed? (4)

- Surveys and way to process the surveys
- Agent to track the on-line use and viewing behaviour

Let's make things better PHILIPS

Who is going to measure the indicators? (5)

- Knowledge staff

Let's make things better PHILIPS

How often are we going to measure the indicators? (6)

- Twice a year

Let's make things better PHILIPS

Philips Yellow Pages

Knowledge management focus

- Accelerated learning
  - *Faster finding of knowledge*
  - *Faster finding of people*
  - *Absorbing knoweldge quickly in a flexible way*

Dashboard | Example

Let's make things better PHILIPS

The strategic KM activities

- Review for new additions
- System features
- Planning of Yellow Pages implementation (marketing)

Dashboard | Example

Let's make things better PHILIPS

The operational KM activities

System improvement
- Maintenance (gate keepers)
- Implementation of YP (marketing)
- Improving navigation
- Networking

Users
- Adding questions, Best Practices, etc
- Gate keepers (answering questions)

Dashboard | Example

Let's make things better PHILIPS

KM ambition

- Current level 3 to 4
- Within 2 years being on level 8

Dashboard | Example

Let's make things better PHILIPS

KM performance indicators (1)

- Contribution to improved speed of learning of YP user / time saving by use
  - *Yellow Pages need to result in improved speed of learning for the user, showed in time saving in the learning process (the needed knoweldge is found faster in the users perception)*
- Easiness of access (diamond, english etc)
  - *How many people at Philips can use the system, while they have access or can communicate with other users (language)*

Dashboard | Example | Definitions & examples | Tour on indicators

Let's make things better PHILIPS

KM performance indicators (2)

- Useability
  - *Number of users*
    - Shows the interest for knowledge sharing
  - *Reaction time answering open questions*
    - Shows if response is quick enough to speed up learning
  - *Number of people contributing (FAQ's, etc)*
    - Is the tool working that well that people also like to contribute
  - *Number of frequent users*
    - Shows how many people are happy with the system and see the value added for them selves
  - *Role as network > number of hyperlinks (available and used)*
    - Shows if Yellow Pages is really working as a network tool and if it's used

Let's make things better PHILIPS

KM performance indicators (3)

- Are the indicators really showing the contribution of knowledge management to the business performance?
  - While Yellow Pages is a knowledge management tool and the indicatorts are showing the contribution of the tool to improve people's work, the indicators show the contribution of KM to the business performance.

Dashboard | Example | Definitions & examples

Let's make things better PHILIPS

Targets of performance indicators (1)

- Contribution to improved speed of learning
  - *85% of users sees improvement*
- Time saving by use
  - *5% of users see a 1 day time save a year*
- Easiness of access
  - *X % of first time users without problems in system*
  - *X % of users see language not as a barrier*
  - *X % of users says navigating and layout is good*
- Number of users
  - *'00 > 3000*
  - *'01 > 10.000*
  - *'02 > 20.000*

Dashboard | Example | Presentation | Tour on targets

Let's make things better PHILIPS

Targets of performance indicators (2)

- Reaction time answering open questions
  - *All questions answered within 2 workingdays*
- Number of people contributing (FAQ's, etc)
  - *30% of users contributing*
- Number of frequent users
  - *X % of users uses Yellow Pages X time a month or more*
- Role as network > number of hyperlinks (available and used)
  - *35% of users has one or more hyperlinks on personal page*
  - *X % of the hyperlinks is used during last year*

Let's make things better PHILIPS

How will someone react when this is measured? (1)

Dashboard
Example
Presentation
Tour on effect

System developers
- *Design system to contribute to good use*
- *Stimulate use and useful use*

Users (if the measurement outcomes are made avialable for them)
- *Giving more feedback while performance and usefulness of feedback is visible*
- *Get more aware of importance of contributing to Yellow Pages*

Let's make things better PHILIPS

Is this behavior the kind of behavior desired?

If not, use other indicator

Dashboard
Example

- Yes, this is the behavior desired

Let's make things better PHILIPS

Is it possible to measure the indicators? (1)

Dashboard
Example
Tour on measurement

- All indicators can be measured
- Some indicators are not objective measurable, but will measure the users perception

Let's make things better PHILIPS

Is it cost effective to measure the indicators? (2)

Dashboard
Example

- System measures are cost effective
  - *These measures are already available or can be added to the system easily*
- Survey measurement can be cost effective
  - *Surveys ask time investment of users, by not making the survey time consuming it is cost effective (use of short, quick and easy questions)*

Let's make things better PHILIPS

How are we going to measure the indicators? (3)

Dashboard
Example

- System
  - *Easiness of access*
  - *Number of users*
  - *Reaction time answering open questions*
  - *Number of people contributing (FAQ's, etc)*
  - *Role as network > number of hyperlinks (available and used)*
- Survey
  - *Contribution to improved speed of learning*
  - *Time saving by use*
  - *Easiness of access*
  - *Number of frequent users*

Let's make things better PHILIPS

Are tools, investments or adjustments needed? (4)

Dashboard
Example

- Development of survey
- System adjustments for:
  - *Role as network > number of hyperlinks (available and used)*

Let's make things better PHILIPS

Who is going to measure the indicators? (5)

Dashboard

- Aad Streng

How often are we going to measure the indicators? (6)

- Monthly for system measures
- Twice a year for survey

Let's make things better PHILIPS

Appendix 6.5 Performance report P3C pilot

This appendix shows the performance report as made for the pilot at P3C. The three pages are the introduction to the performance report, the following pages show the performance for each indicator. The charts where the indicator results are shown are all the same as figure 5.4 of the report. Showing these charts here is not needed. The report for the VCR business in Germany is used here.

Introduction

This is the performance report of PCE and P3C operation for the German VCR business. This is the first version of the report and is based on the results of the Apollo-project. Please send remarks on this report to arend.jan.van.den.beld@Philips.com (EMEA2).

Focus area of report

The report focuses on the VCR-market (VCR, TV VCR and Camcorders) for the German market and is in this way linked to the Krefeld call center.
The activities covered with this report are based on the Apollo-project and cover the following activities:

- Knowledge Base (AKBS) building
- Escalation process
- Feedback process

The involved Philips departments are:

- BG Video
- CE P3C
- P3C
- NSO Germany
- CE marketing Europe

The performance indicators

The P3C area of the Video business focuses most of all on quality improvement. This can be made more explicit in the following way:

- *Service Quality*, improving the service quality to the end-consumer, the customer care to the buyers of videos is involved here;
- *Feedback quality*, improving the quality of the Philips products, this can only be influenced by the P3C operations by giving good feedback, so the quality of the feedback/reporting is involved here.

For these areas performance indicators are developed and shown in this report.

Service Quality

- Customer right answered, the consumer will be satisfied if his/her perception is that the right answer is given by the call center;
- First time resolution, the consumer will be satisfied if only one call is needed to have the problem solved;
- Call duration, if the answer is right and answered within one call, the consumer will be satisfied if the call is as short as possible;
- Friendly answered, the consumer will be satisfied if the call is handled friendly in the consumer's perception.

Feedback quality

- Easy to use, if the reporting is easy to use, it will be used more often and the consumer feedback will be used more often in product development and marketing development;
- Needed data available, the reporting tool needs to deliver the data needed to add value to the development area and to make it possible to increase the product quality.

Financial consequences

In the report the financial consequences are calculated in the following way:

Call cost: call volume * call duration (AHT) * cost per minute (1.31 EURO)

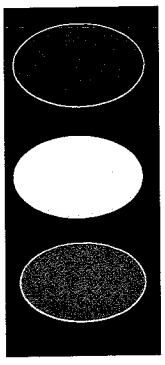
Escalation cost: escalation volume * escalation cost

The changes compared to last month are calculating by cost this month minus the cost of last month

The saving by improvement of first time resolution is calculated by call volume * call duration (AHT) * cost per minute (1.31 EURO) * change in first time resolution to last month. The change is calculated by percentage this month first time resolved minus percentage last month resolved.
This is the first time resolution saving, while a customer that is not first time served, always will be called (outbound call) by the call center, a customer that is first time served isn't called by the call center. The difference between the two categories is at least one outbound call. If the first time resolution increases with 1%, 1% of the customers didn't need to be called by the call center, which saves money. So the difference in first time resolution multiplied with the call volume, AHT en cost, is the saving by first time resolution. This number gives an indication while due to changes in the call volume the number can't be calculated exactly.

Status

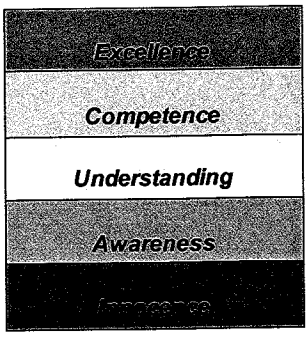
The reports show a traffic light to make visible how the status of the indicator is:



Red: Indicator not on target for 2 or more months
Yellow: Indicator not on target for one month
Green: Indicator on target

Maturity Profile

The report uses a maturity profile to show how mature the work on the area of the performance indicator is:



Innocence: *Of no value to us*
The value of this area is not seen by the business and so the objective and performance of this area is unknown. This area is seen as area only interesting for KM/HRM/Quality and is not linked to other business areas

Awareness: *Value only seen in KM/HRM/Quality area*
There is worked on this area to please the KM/HRM/Quality department. Objective and strategy are known within the KM/HRM/Quality departments, the performance is known on gut feeling. The area is seen as an area mostly interesting for KM/HRM/Quality and is ad-hoc linked to other business areas.

Understanding: *Value is seen and performance measured*
The value of the area is recognized and the area is seen as supportive in reaching the goal of the focus area (cycle time, learning, quality or innovation). Objective, strategy and indicator targets are known by key departments and managers; the performance is measured on key indicators. The area is seen as an area interesting for key departments to support in reaching goals. The area is linked to the short term planning of the business.

Competence: *Area is important and performance is at average of benchmark*
The value of the area is recognized and the area is seen as important in reaching the goal of the focus area (cycle time, learning, quality or innovation). Objective, strategy and indicators are known by departments and managers; the performance is measured on key indicators and controlled. The area is seen as an area interesting for all departments to support in reaching goals. The area is linked to the planning of the business. The performance is at the average of a relevant benchmark.

Excellence: *Area very important, performance within top 10% of benchmark*
The value of the area is highly recognized and the area is seen as very important in reaching the goal of the focus area (cycle time, learning, quality or innovation). Objective, strategy and indicators are well known by departments and managers; the performance is measured on a broad set of indicators and controlled. The area is seen as an important area for all departments to support in reaching goals. The area is linked to the strategic planning of the business. The performance is within the top 10% of a relevant benchmark

This is the introduction of the performance report. The charts where the indicator results are shown are all the same as figure 5.4 of the report. Showing these charts here is not needed.

Appendix 6.6 Results of the KM indicators validation

This appendix shows the results of the knowledge management performance indicator validation. The results are shown by the agenda points of the meeting, for each agenda point a conclusion will be made.

The agenda of the meeting was as follows, during the first validation round the 16 cells of the overview table were discussed. During the second validation round the four focus areas were discussed with the indicators that were left after the first round. For clearness, the table below shows how the cells are named during the validation, this is the same table as table 5.1 in the report.

	Competence/people	Process	Customer	Financial
Cycle time	Cycle time 1	Cycle time 2	Cycle time 3	Cycle time 4
Learning	Learning 1	Learning 2	Learning 3	Learning 4
Quality	Quality 1	Quality 2	Quality 3	Quality 4
Innovation	Innovation 1	Innovation 2	Innovation 3	Innovation 4

The first measurement round

During the first measurement round, the participants had three options, an indicator is (very) relevant, by choosing R, with a maximum of two. An indicator doesn't measure the contribution of knowledge management and can be skipped from the list of indicators, showed by W. Not choosing an indicator means an indicator is measuring contribution of knowledge management but is not at the top two of relevant indicators.
During the first few cells, one or two participants thought that for all indicators something needed to be filled in. To do this, they choose the two most relevant and said the other indicators needed to be skipped. The number of people that like to skip an indicator is less reliable in this way.

The indicators will be arranged in the three categories here (relevant, moderate and skip).

- The indicator is ranked relevant if at least 4 respondents say the indicator is in the top 2 of relevance in this cell.
- The indicator is ranked moderate if less than 3 respondents want to skip the indicator
- The indicator is skipped if 3 or more respondents want to skip the indicator and 2 or less see the indicator at the top 2 of relevance

Cell Cycle time 1

Table cycle time 1	R (1)	W (-1)	Total	n
1. Time to create new knowledge	5	0	5	5
2. Time to decision to create new knowledge	4	1	3	5
3. Time to volume / competence	4	2	2	6
4. Time to decision to competence	3	3	0	6

Relevant indicators: Time to create new knowledge (KM PI 1)
Time to decision to create new knowledge (KM PI 3)

Moderate indicators: Time to volume / competence (KM PI 2)

Skip indicators: Time to decision to competence (KM PI 4)

Cell Cycle time 2

Table cycle time 2	R (1)	W (-1)	Total	n
1. Speed of strategic knowledge activities	5	1	4	6
2. Time to get connected	5	1	4	6
3. Speed of operational knowledge activities	4	1	3	5
4. Earned knowledge value	1	2	-1	3
5. Time to get resources	2	4	-2	6

Relevant indicators: Speed of strategic knowledge activities (KM PI 15)
Speed of operational knowledge activities (KM PI 16)
Time to get connected (KM PI 17)

Moderate indicators: Earned knowledge value (KM PI 19)

Skip indicators: Time to get resources (KM PI 18)

Cell Cycle time 3

Table cycle time 3	R (1)	W (-1)	Total	n
1. Speed of customer process	6	1	5	7
2. First time resolution	4	1	3	5
3. Earned customer value	0	3	-3	3

Relevant indicators: Speed of customer process (KM PI 34)
First time resolution (KM PI 41)

Skip indicators: Earned customer value (KM PI 35)

Cell Cycle time 4

Table cycle time 4	R (1)	W (-1)	Total	n
1. Time to money	6	1	5	7
2. Savings by knowledge activity cycle time reduction	0	3	-3	3

Relevant indicators: Time to money (KM PI 45)

Skip indicators: Savings by knowledge activity cycle time reduction (KM PI 46)

Cell Learning 1

Table learning 1	R (1)	W (-1)	Total	n
1. Availability of competence	5	1	4	6
2. Percentage reached PDP	5	1	4	6
3. Time to volume / competence	5	1	4	6
4. Number of times new knowledge developed	1	3	-2	4
5. Age of absorbed knowledge	0	4	-4	4

Relevant indicators: Availability of competence (KM PI 5)
Percentage reached PDP (KM PI 7)
Time to volume / competence (KM PI 2)

Skip indicators: Number of times new knowledge developed (KM PI 12)
Age of absorbed knowledge (KM PI 6)

Cell Learning 2

Table learning 2	R (1)	W (-1)	Total	n
1. Learning	4	0	4	4
2. Re-use of knowledge	5	2	3	7
3. Number of delivered Best Practices	2	1	1	3
4. Contributions to knowledge bases	3	3	0	6
5. Review effectiveness	1	4	-3	5
6. KM marketing	0	6	-6	6

Relevant indicators: Learning (KM PI 21)
Re-use of knowledge (KM PI 22)

Moderate indicators: Number of delivered Best Practices (KM PI 32)
Contributions to knowledge bases (KM PI 24)

Skip indicators: Review effectiveness (KM PI 20)
KM marketing (KM PI 23)

Cell Learning 3

Table learning 3	R (1)	W (-1)	Total	n
1. Number of repeat complaints	6	1	5	7
2. Number of repeat field calls	0	3	-3	3

Relevant indicators: Number of repeat complaints (KM PI 36)

Skip indicators: Number of repeat field calls (KM PI 37)

Cell Learning 4

Table learning 4	R (1)	W (-1)	Total	n
1. Savings by knowledge re-use	5	1	4	6
2. Reduction in cost of quality	4	2	2	6
3. Cost of competence building	2	3	-1	5

Relevant indicators: Savings by knowledge re-use (KM PI 48)
Reduction in cost of quality (KM PI 48)

Skip indicators: Cost of competence building (KM PI 47)

Cell Quality 1

Table quality 1	R (1)	W (-1)	Total	n
1. Availability of competence	5	1	4	6
2. Employee satisfaction	3	2	1	5
3. Number of competence gap adjustments	1	1	0	2
4. Ability to attract talented people	2	5	-3	7

Relevant indicators: Availability of competence (KM PI 5)

Moderate indicators: Employee satisfaction (KM PI 9)
Number of competence gap adjustments (KM PI 8)

Skip indicators: Ability to attract talented people (KM PI 10)

Cell Quality 2

Table quality 2	R (1)	W (-1)	Total	n
1. Tool availability	3	0	3	3
2. Reliability of data / information	2	1	1	3
3. Information maintenance	3	2	1	5
4. Competence maintenance	3	2	1	5
5. Learning	3	3	0	6
6. Review effectiveness	0	2	-2	2
7. Training maintenance	0	3	-3	3

Relevant indicators: Tool availability (KM PI 29)
Reliability of data / information (KM PI 25)
While this is a large group of indicators the outcomes are adjusted and the best scoring indicators are set in the area relevant

Moderate indicators: Information maintenance (KM PI 26)
Competence maintenance (KM PI 27)
Learning (KM PI 21)
Review effectiveness (KM PI 20)

Skip indicators: Training maintenance (KM PI 28)

Cell Quality 3

Table quality 3	R (1)	W (-1)	Total	n
1. Knowledge user satisfaction	6	1	5	7
2. First time resolution	4	1	3	5
3. Knowledge user complaints	2	2	0	4
4. Field call rate	1	2	-1	3

Relevant indicators: Knowledge user satisfaction (KM PI 39)
First time resolution (KM PI 41)

Moderate indicators: Knowledge user complaints (KM PI 38)
Field call rate (KM PI 40)

Cell Quality 4

Table quality 4	R (1)	W (-1)	Total	STD	n
1. KM budget available	3	3	0	1.10	6
2. Reduction in cost of quality	1	2	-1	1.15	3

Moderate indicators: KM budget available (KM PI 50)
Reduction in cost of quality (KM PI 49)

Cell Innovation 1

Table innovation1	R (1)	W (-1)	Total	n
1. Proportion employees making new idea suggestions	4	1	3	5
2. Number of times new knowledge developed	4	2	2	6
3. Network building	3	2	1	5
4. Number of patents	3	3	0	6

Relevant indicators: Proportion employees making new idea suggestions (KMPI 14)
Number of times new knowledge developed (KM PI 12)

Moderate indicators: Network building (KM PI 13)

Skip indicators: Number of patents (KM PI 11)

Cell Innovation 2

Table innovation2	R (1)	W (-1)	Total	n
1. Ratio new ideas generated and new ideas implemented	6	0	6	6
2. Time to new idea	3	2	1	5
3. Source Spread	2	3	-1	5
4. Number of delivered Best Practices	2	3	-1	5

Relevant indicators: Ratio new ideas generated and new ideas implemented (KM PI 33)

Moderate indicators: Time to new idea (KM PI 31)

Skip indicators: Source Spread (KM PI 30)
Number of delivered Best Practices (KM PI 32)

Cell Innovation 3

Table innovation3	R (1)	W (-1)	Total	n
1. Percentage new products succeeded in the market	6	0	6	6
2. Percentage customers with repeat business	1	4	-3	5
3. Percentage new customers	0	5	-5	5

Relevant indicators: Percentage new products succeeded in the market (KM PI 44)

Skip indicators: Percentage customers with repeat business (KM PI 43)
Percentage new customers (KM PI 42)

Cell Innovation 4

Table innovation4	R (1)	W (-1)	Total	n
1. Percentage of sales earned with new knowledge	6	1	5	7
2. Earned with spin-off or divestment of knowledge	1	4	-3	5

Relevant indicators: Percentage of sales earned with new knowledge (KM PI 51)

Skip indicators: Earned with spin-off or divestment of knowledge (KM PI 52)

Conclusion first validation round

The first validation round gives three groups of indicators, relevant, moderate and skipped indicators. The three groups will be summarized here.

Relevant indicators

Cycle time focus:	Time to create new knowledge (KM PI 1) Time to decision to create new knowledge (KM PI 3) Speed of strategic knowledge activities (KM PI 15) Speed of operational knowledge activities (KM PI 16) Time to get connected (KM PI 17) Speed of customer process (KM PI 34) First time resolution (KM PI 41) Time to money (KM PI 45)
Learning focus	Availability of competence (KM PI 5) Percentage reached PDP (KM PI 7) Time to volume / competence (KM PI 2) Learning (KM PI 21) Re-use of knowledge (KM PI 22) Number of repeat complaints (KM PI 36) Savings by knowledge re-use (KM PI 48) Reduction in cost of quality (KM PI 49)
Quality focus	Availability of competence (KM PI 5) Tool availability (KM PI 29) Reliability of data / information (KM PI 25) Knowledge user satisfaction (KM PI 39) First time resolution (KM PI 41)
Innovation focus	Proportion employees making new idea suggestions (KMPI 14) Number of times new knowledge developed (KM PI 12) Ratio new ideas generated and new ideas implemented (KM PI 33) Percentage new products succeeded in the market (KM PI 44) Percentage of sales earned with new knowledge (KM PI 51)

Moderate indicators

Cycle time focus	Time to volume / competence (KM PI 2) Earned knowledge value (KM PI 19)
Learning focus	Number of delivered Best Practices (KM PI 32) Contributions to knowledge bases (KM PI 24)
Quality focus	Employee satisfaction (KM PI 9) Number of competence gap adjustments (KM PI 8) Information maintenance (KM PI 26) Competence maintenance (KM PI 27) Learning (KM PI 21) Review effectiveness (KM PI 20) Knowledge user complaints (KM PI 38) Field call rate (KM PI 40) KM budget available (KM PI 50) Reduction in cost of quality (KM PI 49)

Innovation focus	Network building (KM PI 13) Time to new idea (KM PI 31)
Skip indicators	
Cycle time focus	Time to decision to competence (KM PI 4) Time to get resources (KM PI 18) Earned customer value (KM PI 35) Savings by knowledge activity cycle time reduction (KM PI 46)
Learning focus	Number of times new knowledge developed (KM PI 12) Age of absorbed knowledge (KM PI 6) Review effectiveness (KM PI 20) KM marketing (KM PI 23) Number of repeat field calls (KM PI 37) Cost of competence building (KM PI 47)
Quality focus	Ability to attract talented people (KM PI 10) Training maintenance (KM PI 28)
Innovation focus	Number of patents (KM PI 11) Source Spread (KM PI 30) Number of delivered Best Practices (KM PI 32) Percentage customers with repeat business (KM PI 43) Percentage new customers (KM PI 42) Earned with spin-off or divestment of knowledge (KM PI 52)

The list of relevant indicators is now input for the second validation round, to make a list of core indicators for each focus area.

Second validation round

During the second validation round the participants are asked to rank the relevance and usability (can it be made operational) of the indicators for each focus area.
For this part only the relevant indicators of the first round are used.
The questions asked are:

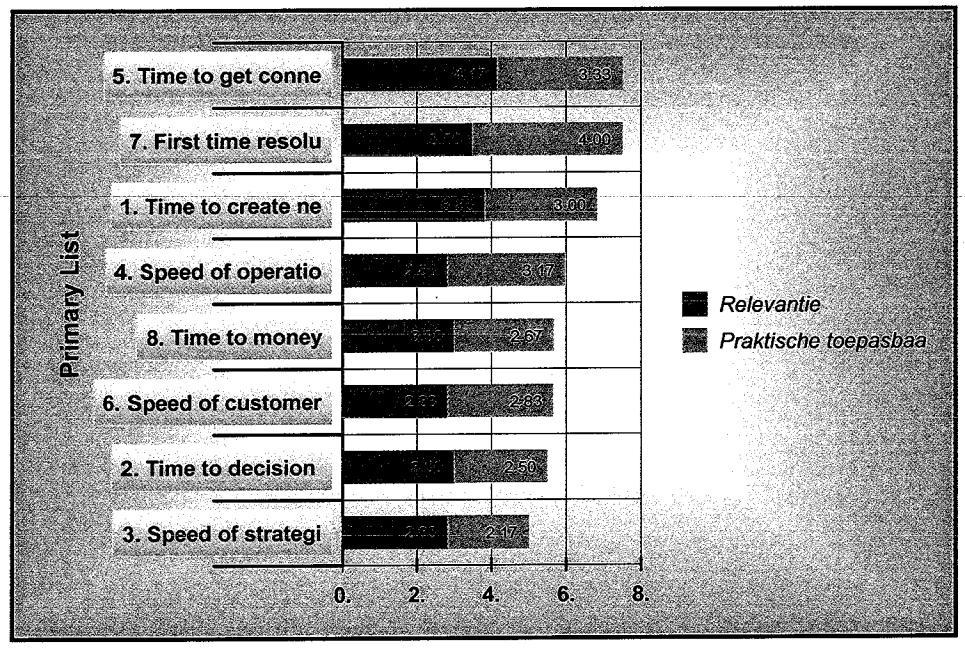
- Rank each indicator in this focus area on a scale 1-5 for relevance (irrelevant, nor relevant or irrelevant, relevant, very relevant, highly relevant).
- Rank each indicator in this focus area on a scale 1-5 for usability (very difficult, difficult, nor difficult or easy, easy, very easy).

The indicators will be arranged in two groups, relevant and core, where the core indicators are the most relevant indicators for the focus area.
The three highest scores are taken, where first of all the summed total is important, the relevance must be at the top 4 or 5 of relevance and the range of relevance must not be to big, where the usability need to be at least three.
The core indicators are yellow highlighted in the table; the other indicators are the relevant indicators.

In this second validation round a problem occurred for the learning focus. In this focus seven instead of the meant eight indicators are validated; indicator 2, time to volume/competence is not validated. To check if this indicator is in the area of the core indicators, all participants are asked to rank the group again (this is not completely valid while it is done at another moment in time). Based on the results of this second validation of the learning focus, can be concluded that indicator two is not a core indicator and the results will stay the same.

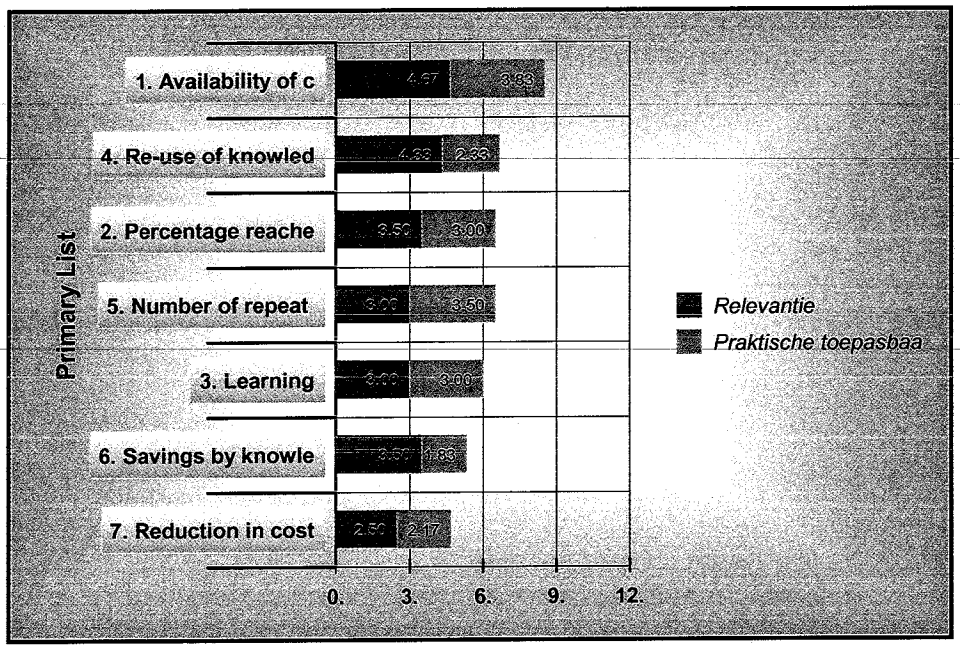
Focus area cycle time

Indicator	Relevance	Range relevance	Usability	Range usability	Total
1.Time to create new knowledge	4(3.83)	2	3(3.00)	3	6.83
2.Time to decision to create new knowledge	3(3.00)	3	3(2.50)	2	5.50
3.Speed of strategic knowledge activities	3(2.83)	3	2(2.17)	2	5.00
4.Speed of operational knowledge activities	3(2.83)	2	3(3.17)	2	6.00
5.Time to get connected	4(4.17)	2	3(3.33)	3	7.50
6.Speed of customer process	3(2.83)	3	3(2.83)	3	5.67
7.First time resolution	4(3.50)	2	4(4.00)	1	7.50
8.Time to money	3(3.00)	3	3(2.67)	3	5.67



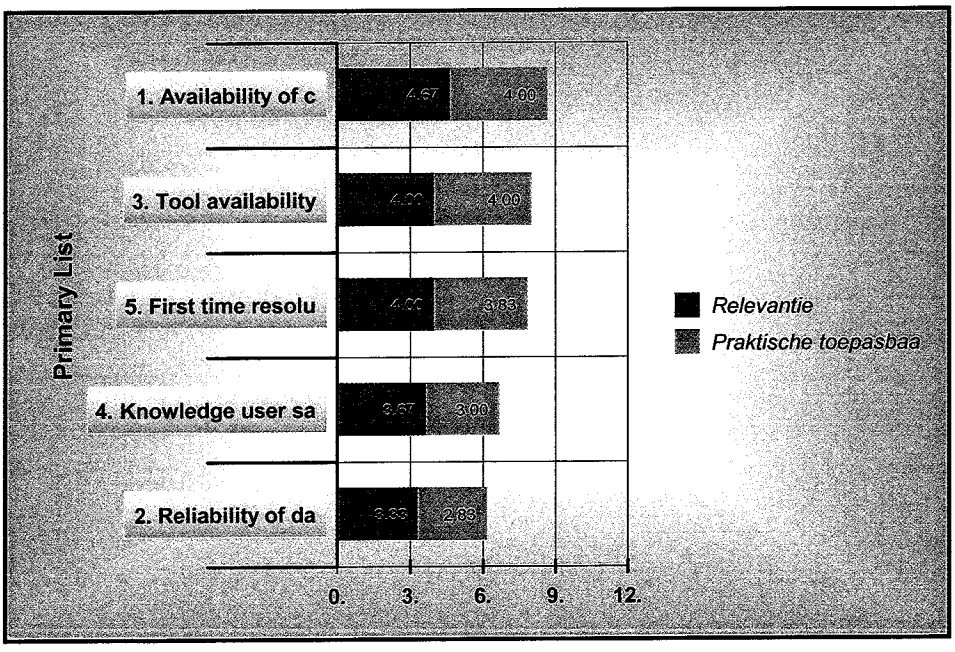
Focus area learning

Indicator	Relevance	Range relevance	Usability	Range usability	Total
1.Availability of competence	5(4.67)	1	4(3.83)	2	8.50
2.Percentage reached PDP	4(3.50)	2	3(3.00)	2	6.50
3.Learning	3(3.00)	4	3(3.00)	4	6.00
4.Re-use of knowledge	4(4.33)	2	2(2.33)	1	6.67
5.Number of repeat complaints	3(3.00)	3	4(3.50)	2	6.50
6.Savings by knowledge re-use	4(3.50)	1	2(1.83)	1	5.33
7.Reduction in cost of quality	3(2.50)	2	2(2.17)	2	4.67



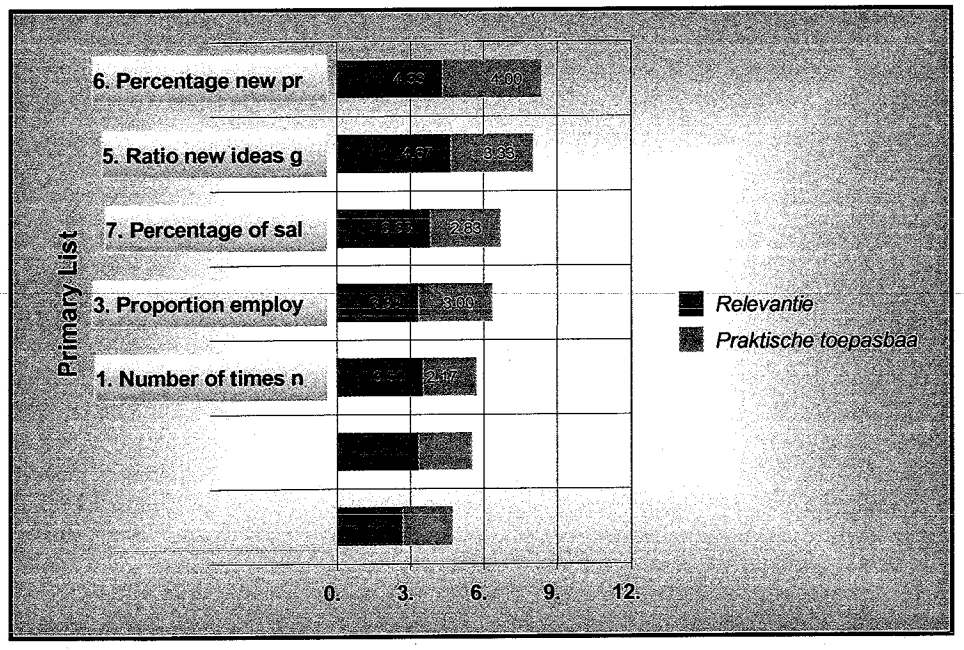
Focus area quality

Indicator	Relevance	Range relevance	Usability	Range usability	Total
1.Availability of competence	5(4.67)	1	4(4.00)	3	8.67
2.Reliability of data / information	3(3.33)	3	3(2.83)	3	6.17
3.Tool availability	4(4.00)	2	4(4.00)	3	8.00
4.Knowledge user satisfaction	4(3.67)	1	3(3.00)	2	6.67
5.First time resolution	4(4.00)	2	4(3.83)	3	7.83



Focus area innovation

Indicator	Relevance	Range relevance	Usability	Range usability	Total
1.Number of times new knowledge developed	4(3.50)	3	2(2.17)	1	5.67
2.Proportion employees making new idea suggestions	3(3.33)	3	3(3.00)	2	6.33
3.Ratio new ideas generated and new ideas implemented	5(4.67)	1	3(3.33)	3	8.00
4.Percentage new products succeeded in the market	4(4.33)	3	4(4.00)	3	8.33
5.Percentage of sales earned with new knowledge	4(3.83)	2	3(2.83)	2	6.67



Conclusion second validation round

From the second round can be concluded that the following indicators are the core performance indicators for the focus areas.

Cycle time focus	Time to create new knowledge (KM PI 1) Time to get connected (KM PI 17) First time resolution (KM PI 41)
Learning focus	Availability of competence (KM PI 5) Percentage reached PDP (KM PI 7) Number of repeat complaints (KM PI 36)
Quality focus	Availability of competence (KM PI 5) Tool availability (KM PI 29) First time resolution (KM PI 41)
Innovation focus	Ratio new ideas generated and new ideas implemented (KM PI 33) Percentage new products succeeded in the market (KM PI 44) Percentage of sales earned with new knowledge (KM PI 51)

Appendix 6.7 Qualitative feedback of KM indicator validation

This appendix shows the qualitative feedback given during the validation meeting of the knowledge management performance indicators. These comments give the background for the more quantitative results shown in paragraph 6.4 and appendix 6.6. The comments are arranged by indicator.
During the validation meeting due to lack of time only on three indicators a discussion is held, the discussion results are also shown here (those three indicators have much more input), the indicators are time to get connected (17), learning (21) and re-use of knowledge (22).

General

- There are too many examples coming from the Customer Care Centres
- Be aware that composed indicators are seen as more important
- Several indicators seems only useable in a call centre
- Sharing and re-using of knowledge is mostly measured for explicit knowledge, not for tacit knowledge

KM PI 1 *Time to create new knowledge*

- How can this be measured?
- Creation of knowledge can also be bying of knowledge

KM PI 2 *Time to volume/competence*

- Measuring the training, doesn't measureif the knoweldge is used and applied

KM PI 4 *Time to decision to competence*

- Irrelevant indicator
- This is the same indicator as KM PI 3

KM PI 5 *Availability of competences*

- Another possible appraoch is measuring the number of competence areas and measuring the competence level for every area

KM PI 6 *Age of absorbed knowledge/information*

- The tacit knowledge is not measured here

KM PI 7 *Percentage reached PDP*

- Good indicator, tailered to the job

KM PI 8 *Number of missed competence gap detections*

- Change name from 'Number of competence gap adjustments' in 'Number of missed competence gap detections' (this have been done)
- Add the hiring of people and the buying of knowledge (has been done)

KM PI 9 *Employee satisfaction*

- This is not a KM indicator

KM PI 10 *Ability to attract talented people*

- Bad indicator, while a lot of things are outside the influence area of Philips

KM PI 11 *Number of patents*

- Indicator result depends heavily on patent policy

KM PI 12 *Number of times new knowledge developed*

- New knoweldge can be incremental new knoweldge, radical new knoweldge and new combination of knoweldge (added in the handbook)

KM PI 17 *Time to get connected*

- Time to get connected is an overall KM-indicator, it shows how well the organisation is organised to find the needed knowledge quickly

Measuring time to get connected is quite scattered answered, to get more insight the reason why a discussion is held, the most important comments were:

- Location of knowledge carrier unknown;
- This is an activity perfromaed often, how to measure this on-line
- It is difficult to meaure if someone has had the right knowledge
- This is more a technical measurement
- Culture of asking is not avaialable soemtimes
- Sometimes finding knoweldge has been done quickly, but later on it becomes clear it is not the correct knoweldge
- Knowledge is not always explicit, makes measuring difficult
- Beter measurement is how a team is organized to be connected
- Intraconnectivity, interconnectivity and extraconnectivity are important by working smart
- Ask people to say when they have had a succesful connection
- Working ad-hoc will often deliver a longer time to connect
- Connectivity is most important enabler for KM

KM PI 18 *Time to get resources*

- Less relevant, while non-KM factors are influencing the indicator
- Externally influenced, it depends too much from the market situation

KM PI 19 *Earned knowledge value*

- A lot of internal factors are influencing the indicator, these indicators are not linked to KM
- Title does not refelct the contents

KM PI 20 *Knowledge review effectiveness*

- Is the same as KM PI 8, those indicators can better be merged

KM PI 21 *Learning*

Measuring learning is quite scattered answered, to get more insight in the reason why a discussion is held, the most important comments were:

- Frequency of evaluation says nothing about the quality of the evaluation and the follow-up
  - This is true, but it is the basis to start improving
- Learning is the cornerstone of KM
- This indicator is lagging, other indicators are more leading and in this way better to measure learning
- It is maybe possible to measure if the things learned during a training are done during the normal work
- Debriefs of successes are more easy than debriefs of faults
- A lot of learnigns are tacit, how can those be measured
- Learning from others can be a topic during appraisal, it is about a cultural change

KM PI 22 *Re-use of knowledge*

- This indicator is stimulating the "not being innovative"
- How to recognize re-use of knowledge?
- Within a competence area, there is a lot of re-use, outside a competence are there is not

Measuring re-use of knowledge is quite scattered answered, to get more insight in the reason why a discussion is held, the most important comments were:

- It is important to bring new products quickly
- Very internally focussed, is there no better knoweldge outside
- Relevant while it also shows the quality of knowledge
- For semiconductors, re-use is key
- The learning curve can be followed quicker, when not everything need to be designed again
- It is not about re-use of knoweldge, but on business impact
- The re-use can be very good, but than you can be out of business by missing a new area
- The definition of re-use of knoweldge, very difficult to make operational (what is re-used knoweldge)
- If it is not known what knoweldge is avaialble, working on the measurment of re-use is not possible
- Re-use is situation dependend, it is not always the best solution
- There is a lot of tacit sharing and re-use of knowledge

KM PI 23 *KM marketing*

- This is a detail, this indicator can be skipped (not relevant)

KM PI 24 *Contribution to knowledge bases*

- This is not a goal on it self, it is a way to reach another goal
- The transfer of tacit knoweldge is missing here
- Tacit-tacit sharing is missing

KM PI 26 *Information maintenance*

- The indicator is focused on explicit knowledge, what is often not the most important

KM PI 27 *Competence maintenance*
- Can better be linked to PDP

KM PI 28 *Training maintenance*
- The importants depends on the half-value-time of the knowledge involved
- What is the difference with indicator KM PI 27

KM PI 29 *Tool availability*
- This is operational management, not knowledge management
- Make a link to tool maintenance

KM PI 30 *Source spread*
- Is the use of external sources stimulating the creativitiy and innovativeness?

KM PI 32 *Number of delivered Best Practices*
- This is more a quality indicator than an innovation indicator
- This is a good indicator

KM PI 33 *Ratio new ideas generated and new ideas implemented*
- Ths indicator results are heavily influenced by the idea-management-policy
- As higher level measure the following indicator is possible, 'new technology developments introduced into a real product'

KM PI 34 *Speed of customer process*
- Is related to call center, also relate this one to the Prodcut Creation Process

KM PI 35 *Earned customer value*
- This is a management indicator, not a knowledge management indicator

KM PI 36 *Number of repeat complaints*
- Almost the same as KM PI 37
- For a developemnt organisation, this indicator effects the whole chain (including production and sales)

KM PI 37 *Number of repeat field calls*
- Almost the same as KM PI 36

KM PI 39 *Knowledge user satisfaction*
- Focus is here on explicit knowledge, not on tacit

KM PI 42 *% new customers*
- This is not a knoweldge management indicator
- This is no knoweldge management indicator, KM is not everywhere

KM PI 43 *Percentage customers with repeat business*
- This is not a knoweldge management indicator
- No relation to knowledge management

KM PI 44 *Percentage new products succeeded in the market*
- This is not a knoweldge management indicator
- This is a vitality index

KM PI 46 *Savings of operational knowledge activities*
- This is an indicator for operational management
- How can this be measured in a non-call center activitiy?

KM PI 47 *Cost of competence building*
- This indicator is not important, while it is very trivial

KM PI 48 *Savings by knowledge re-use*
- Link this indicator to KM PI 22, re-use of knowledge

KM PI 50 *KM budget availability*
- Not availability, but size is important, also link this indicator to training budget (or R&D)

KM PI 51 *% sales earned with new knowledge*
- Link to KM PI 44

KM PI 52 *Earned with spin-off and divestment of knowledge*
- Also add the royalties from companies who require the same knowledge

The proof of the pudding is in the eating
Proverb

Appendix 8.1 Performance of the Wizard-project

What should be the last part of your report if you are working on a knowledge creation project, developing a knowledge management performance measurement approach?
Exactly, the approach executed on your own project. So this appendix will first set-up a set of performance indicators and will then measure them for the Wizard-project

The Wizard-project can be seen from two angles. First from the Philips point of view, the project is a knowledge creation project. At Philips, no knowledge is available on measuring performance of knowledge management and external approaches weren't found for the Philips objective. This concluded in developing this approach. The second angle is the one of the graduate student working on the project; the project is a final thesis and internship. The objective is to get more practical experience with management issues. This is knowledge building. For both angels, the project can be stated as a knowledge management project.

Measuring the performance of the Wizard-project by using the Wizard-approach gives some difficulty. The focus of the Wizard-project is on ongoing knowledge management projects, which the Wizard-project is not. While this is the only drawback for using the approach, *the eating is continued to prove the pudding.*

The Wizard-stages will now be used to develop performance indicators for the Wizard-project.

Knowledge management focus
The Wizard-project has two focus areas being, the innovation and learning focus. The innovation focus is most important for Philips, while in the relatively new area of knowledge management; an approach needs to be developed. The learning focus is most important for the graduate student, while getting experience with management issues is important for his future activities.

Knowledge management activities
The activities that are giving guidance and are important in influencing the direction of the project can be seen as the strategic knowledge management activities. The activities are:

- Making a research model;
- Meetings with the supervisors;
- Meetings with the sounding board.

The operational knowledge activities are the activities focused on getting, using, evaluating and learning of knowledge. These are:

- Literature searches;
- Interviews with stakeholders;
- Analysing and combining, the using of knowledge;
- Making the report, tool and presentations;
- Validating the approach and the tool.

Knowledge management performance ambition
The knowledge management performance ambition lies on level five (see figure 5.3). The key indicators will only be measured, while the measurement will only take place once. Adjusting the approach can't be done in this project, but learnings can help in a next project.

Knowledge management performance indicators
For the innovation part of the project it is important that an approach is developed that is useful for Philips, but also broadly useful. The development of the approach also needs to take in to consideration all the developments in the area of knowledge management performance measurement. For this purpose it is important to use a broad set of sources and a first indicator for the innovation focus is *source spread*. It is also required to have some new things in the approach, while it is a new area. For this purpose, *the number of times new knowledge developed* is important to measure.
The last part for the innovation focus is to see if the innovation is interesting for the customers. An innovation is only an innovation if it is successful in the market. For this purpose the indicator *percentage customers with repeat business* is used, which is a little redefined for this purpose. At this place the number of people that gave feedback on the approach for the second time or multiple times are measured. This is done while they only will help again if the approach is interesting and useful for them.

The learning focus is especially interesting for the graduate student and also here two indicators are identified. The first indicator is *re-use of knowledge*. The available knowledge at Philips or academic world, not known by the graduate student, can be re-used and is a learning experience for the graduate student. The second indicator is the *learning* indicator. The graduate student will learn something if reviews and evaluations are held of the work delivered. From these reviews the learning will take place.

Summarizing, the five indicators are:

Source spread:	The number of different sources used during the project;
New knowledge developed:	The number of times new knowledge for Philips is developed, measured as the number of times new parts of the approach were delivered;
Customers with repeat business:	Number of people giving feedback or comments on the approach for second time or multiple times;
Re-use of knowledge:	The use of knowledge that already exists;
Learning:	The number of reviews and evaluations of the project and parts of the project.

Knowledge management performance indicator targets
While there is not any experience with measuring these kinds of projects, there aren't any targets set in advance. It is better to first measure the performance and set the targets during the measurement at another project with the experience of this measurement.

Knowledge management performance effect

Measuring these indicators focuses the graduate student on using a broad set of sources for the project, having a good basis for the approach, so it will be broadly useable. The development of new knowledge, but also the usefulness of the developed knowledge is stimulated.
By also stimulating the learning and re-using of knowledge, both objectives of the project are stimulated. Philips has got an innovative approach and has built experience, while the graduate student has learned new knowledge.
It can be concluded that the indicators will have the right effect, with the only drawback being that by focusing on a broad set of sources it can stimulate an overload of unnecessary sources.

Measuring the performance

The indicators just mentioned, can almost all be measured. The number of times new knowledge was developed is not measurable at the moment, while it is not known what exactly is new knowledge for Philips. Also while the measurement takes place at the end of the project, it is very difficult to say when certain knowledge is developed.
The indicators that can be measured need to be measured manually, by going through the meetings, used sources, evaluations and project milestones. For this purpose (a one-time measurement) it can be done cost effectively, but measuring this more often (what is not needed in this case) will need another less time consuming approach.

Review the performance

The charts below show the results of the measurement.

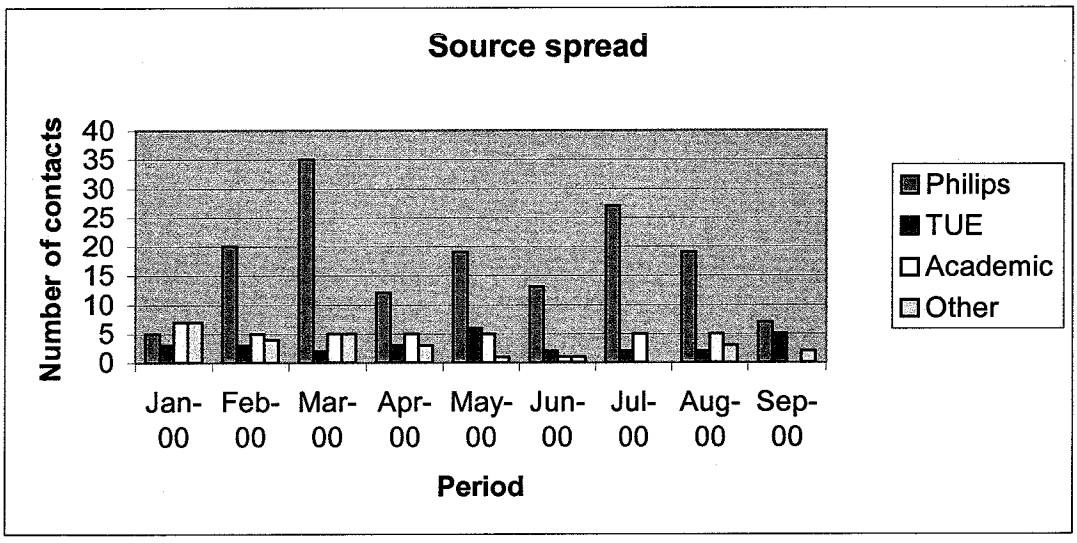


Figure A8.1 Wizard-project source spread

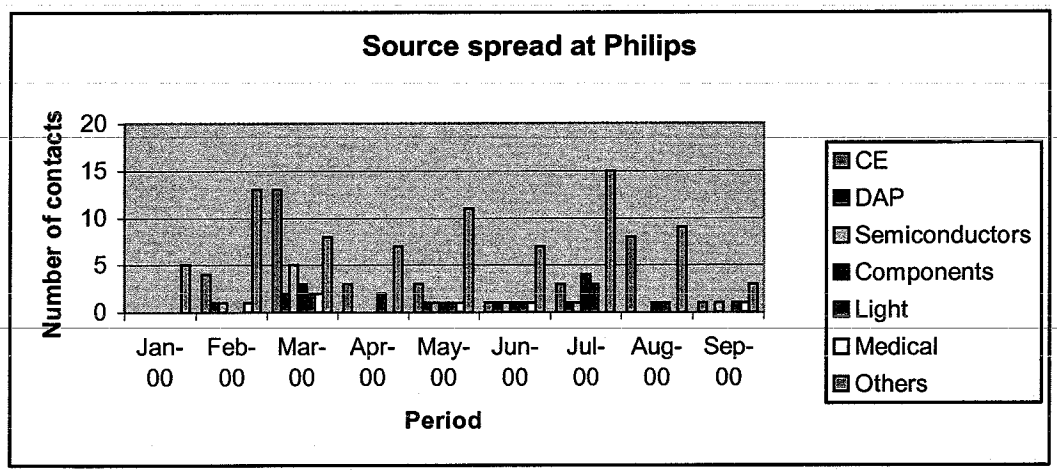


Figure A8.2 Wizard-project source spread at Philips

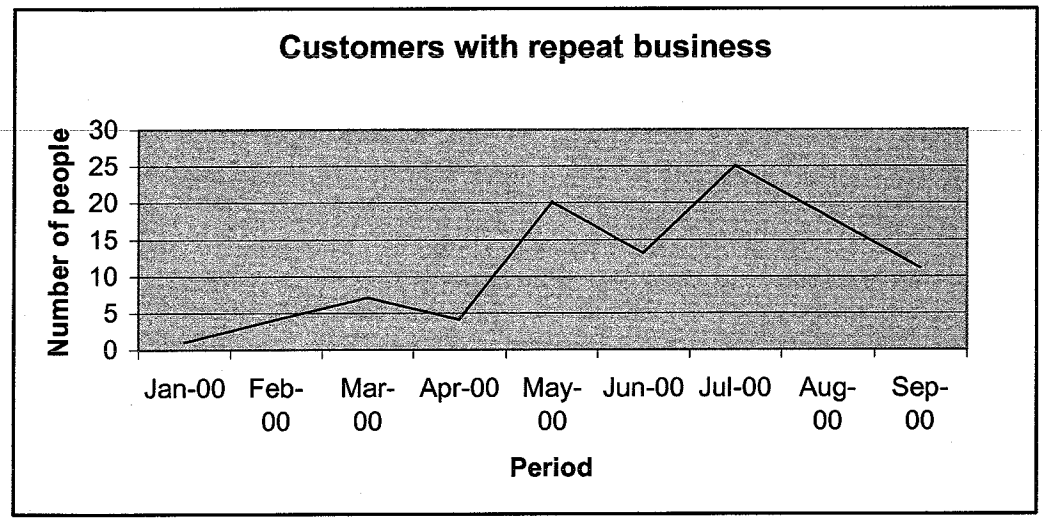


Figure A8.3 Wizard-project customers with repeat business

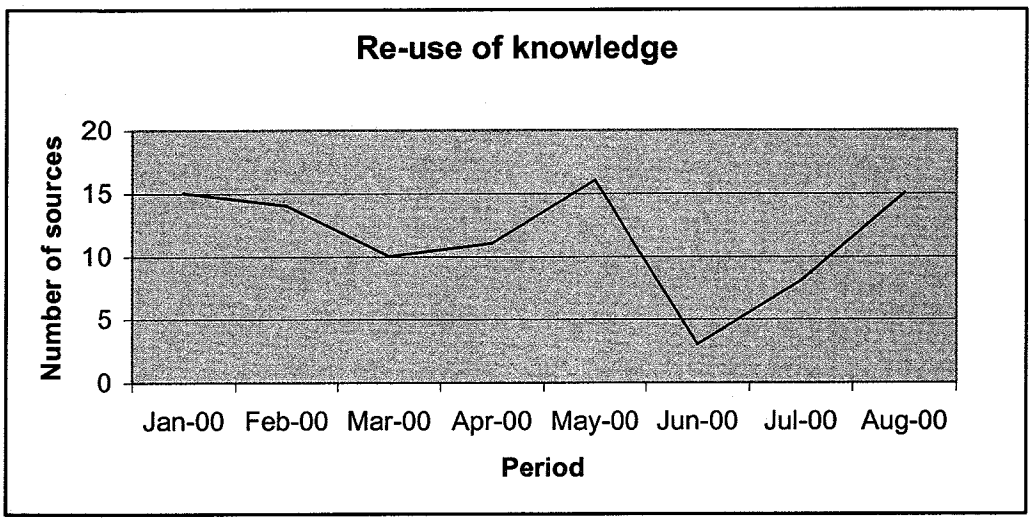


Figure A8.4 Wizard-project re-use of knowledge

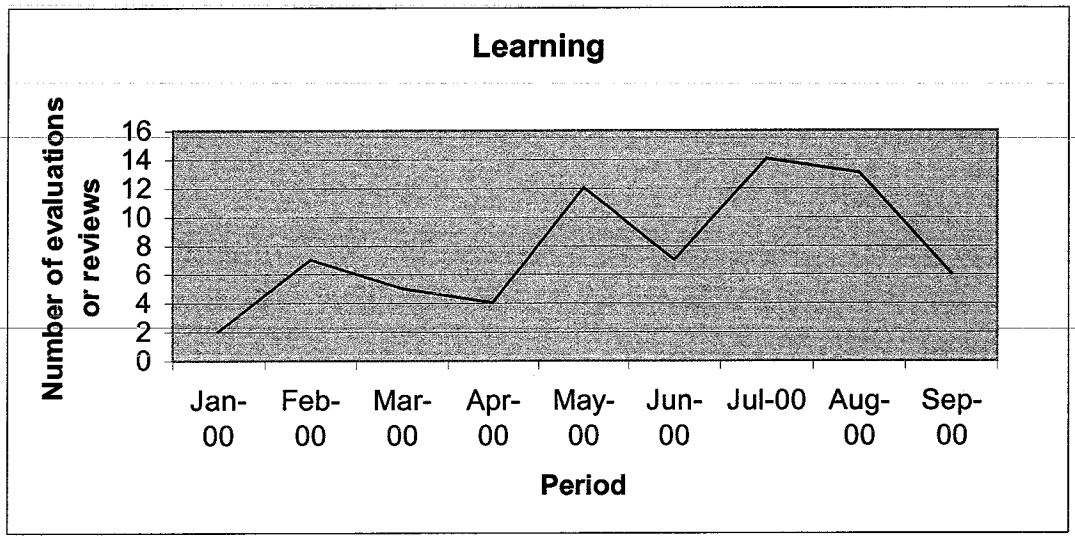


Figure A8.5 Wizard-project learning

These five charts are input for the learning and adjustment phase.

Learning and adjustments based on measurement

Based on the measurement, the following learnings can be seen.

- The source spread in general is quite good, more external sources could have been used, but the effect of it will not be big;
- The Philips sources should have been spread better in this research-project, now mostly sources of corporate groups are used. While the developed approach is a support for the business, more business input should have helped to make the approach more practical and better to use in the business;
- The customers with repeat business grew during the project, which is good. One drawback is, that at the end of the project the same group has given feedback several times. By adding new people to the group, new insights and comments would have come up and would have broadened the feedback. Broader input would have had a positive effect on the quality of the approach;
- The learning is performing quite well. For this indicator, the drawback is present also that the feedback and learning took place with the same people several times. The richness of learnings drops in this way. Finding new people to review and evaluate the project is also needed at the end of the project.

The most important learnings are to keep the spread of the sources in mind in a next project and to keep on adding new people for reviewing and evaluating the results.

Learning and adjustments based on own experience

The start of the project was quite theoretical. By having more practical business input, it would have been possible to follow a more practical route in the project at an earlier stage. The theoretical track at the beginning gave a lot of changes during the interim meeting and the month after the interim meeting.

Establishing a Sounding Board was very helpful. During the project, feedback was given by a lot of individuals, although their views were sometimes in conflict. By having a group of people from different product divisions and from different areas of practice, some nice discussions took place and areas of conflict were explained.

Having a pilot project from the beginning of the project on was also very helpful. The discussions with everyone from Consumer Electronics and P3C made the project more practical, while the theory was linked to a business case. The discussions have initiated quite some adjustments to the approach.

The Wizard-project came a few months too early for Philips. During the start of the project knowledge management was still quite an undefined topic within Philips. Coming in at such a moment made a quick start difficult, while also time was needed to find a definition and representation for knowledge management. The unclearness of knowledge management was even more difficult during discussions within businesses. Meetings within the businesses at the begin of the project were more focused on making the business aware of knowledge management (a task still not finished).
Working on knowledge management during this early stage was also very interesting, while I was in the middle of the discussions on the definition and representation of knowledge management.

The validation phase could better have been done earlier, so there would have been enough time to make all needed adjustments and work on some topics discovered during these meetings.

The objective has been guidance during the project, but not on a detailed level. Now reviewing whether the objective has been reached, it can be concluded that the Wizard-approach addresses effectiveness as well as efficiency measurement. The measurement of knowledge management effectiveness and efficiency through knowledge worker productivity and added value to the business can be found less. These last two expansions haven't really been taken into account during the project; this should be done better a next time.

By working quite independently, but also having quite some reviews, made it a good learning experience. Setting-up of a research and 'selling' the research were the two most challenging parts in it. The way of working of Philips gave also insights in how multinationals work.
The project was a good learning experience. The independent way of working with good support should be kept the same a next time.