REPORT OF WORK PACKAGE 3a

Policy Implications: New Research Agenda

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Abstract

The aim of the report is to suggest a research agenda that supports the policy decision-making process at a European level regarding the management of intangibles. To ensure that the policy decision makers remain focused on research topics, they could draw attention to the ten most important research topics listed in this report, which will lead to a positive and rewarding future development in the field of intangibles in Europe.

Executive Summary

This report is the result of work package 3b in the E*KNOW-NET project. The aim of the work package is to suggest a research agenda that might support the policy decision-making process at a European level regarding the management of intangibles. This is achieved by surveying how researchers, policy makers, consultants, practitioners in companies and other interested parties regard the needs and possibilities for research in this area.

The first step towards the final report was to conduct a literature review presenting a very brief overview of the current status of research on intangibles in four areas, i.e. capital market, management, tax effects and innovation policy. This resulted in a number of suggestions for future research and a number of hot issues were listed for each of the four areas. These suggestions and hot issues served as background documentation for a questionnaire survey.

The scientific results

The questionnaire was distributed among the users of the E*KNOW-NET web site. The respondents were asked about their opinion as to the importance of and their knowledge up till now of each of the suggestions for future research. Since the response rate was not very high, the conclusions should be interpreted with care. However, the report concludes that the most important research topics in the future are:

- To integrate existing guidelines into a common framework for measuring of and reporting on intangibles that will be accepted worldwide
- To assess which organisational factors stimulate or inhibit knowledge diffusion or learning
- To examine the relationship between intangibles and the performance of small and medium-sized enterprises.

The responses were grouped according to the following categorization: business enterprise, consultancy company, policy maker, entrepreneurial association or researcher. This showed that only limited agreements with respect to other research topics exists between the groups. However, other important areas are:

- To study how innovative efforts, personal experience and skills can be integrated in order to improve companies' competitiveness
- To develop a set of Business Models that can structure information about intangibles and describe how they interact with the company's other assets and create value

- To resolve how measurement of intangibles, on the one hand, can be related to the individual company while, on the other hand, standardisation of information in the IC reports is needed.
- To develop a consistent vocabulary to describe and define intangible assets
- To develop a set of standards for valuation of intangibles
- To determine which factors that firms rely on in determining costs & benefits of knowledge management and how these factors are measured
- To assess changes in organisational learning that follow from knowledge management activities.

Policy implications

The challenge to policy implications is to ensure a positive and rewarding future development in the field of intangibles in Europe. This can be achieved by focusing on the list of most important research topics already mentioned in this report. Although the statistical material behind our conclusion is very limited, we propose that the European Commission takes the lead and supports the ten important research topics listed in this report.

There seems to be a remarkable disagreement among researchers and various users of research when it comes to determining the important areas for future research on intangibles.

We propose that this issue should be investigated in more detail. This could be done by repeating the survey on a larger scale where researchers and larger groups of e.g. companies and policy makers are addressed. However, the questionnaire probably needs to be supplemented with interviews of respondents in order to assess the implications of the difference in answers since we cannot a priori assume that any group of respondents is more right in its assessment of future research needs than another.

A more comprehensive version of the report is available as a background report where the literature review, more detailed discussion of results and the questionnaire can be seen. See Bukh *et al*. (2003)

1 Background and Objectives of the Work Package

The E*KNOW-NET project aims at exploiting and enhancing the results of the MERITUM project (Measuring Intangibles to Understand and Improve Innovation Management). The result should be made useful for Science, Technology and Innovation policy decision-making.

The main objective of the network is to create a European Research & Communication Arena on Intangibles. This subject was addressed in the first work package where excellence centres, existing and potential users of knowledge on intangibles from different European countries and countries world-wide were brought together to exploit and diffuse existing expertise in the analysis of production, acquisition and diffusion of knowledge in companies and its implications for science, technology and innovation policy.

The aim of work package 3 is to promote a discussion with the users in order to define both a research agenda that might help improve the policy decision-making process and to explore the new training needs at a European level with regard to management of intangibles in order to link science and technology policy to education policy. This report addresses the first part, i.e. the definition of a *research agenda regarding intangibles* which better suits the European research challenges and signals changes in knowledge management within companies in order to detect opportunities for new innovation policy and research action.

The main areas to be addressed in this report are the implications for innovation policy, the efficiency of capital markets, the management of companies and the tax impact of the disclosure of intangibles. Until now, a substantial amount of research in the area has focused on how to identify and classify intangibles, but more research is needed in order to assess the implications for management and policymaking. The aim of this work package report is to assess how researchers, policy makers, consultants, practitioners in companies and other interested parties see the needs and possibilities for research in this area. This is achieved by *reviewing existing literature regarding suggestions for future research*, by *surveying opinions* on possible research themes and by combining suggestions from literature and opinions to form *a proposed research agenda*.

The co-ordination with other European programmes and initiatives is achieved by reviewing available documents, reports and papers and by surveying opinions of members of excellence centres and users registered in work package 1.

The work package takes the two previous activities in the E*KNOW-NET project as its starting point. In conjunction with the use of previous discussions and results of analyses in especially activity 2, the report was supposed to take into account existing information from organisations such as EUROSTAT, OECD and statistical institutes on intangibles at a macro level and their consequences to capital markets and economic growth. This scope has been extended so that the background report is also to a large extent based on literature from the users of the E*KNOW-NET web site, literature and drafts presented at the Madrid Conference in November 2002 as well as available research reports, articles and books on the subject. Material to incorporate in the survey has been found using a general key word based search in databases, such as Emerald and ABI/Inform, where the key words 'intangibles', 'intellectual capital', 'capital market', 'tax', 'innovation' and 'entrepreneurship' were combined in various ways.

The work package consists of four sections – Capital Markets, Management, Tax Effects and Innovation Policy - which reflects the three original areas considered in the description of work package 3b. One new area (Management) has been added in order to reflect the input from the network as well as the initial circulation of the report among the partners.

The background report has been discussed at E*KNOW-NET meetings to find out whether the four sections are sufficient or if a fifth area, Entrepreneurship, should be included. However, during the literature survey it became clear that only a minor part of the research regarding 'Entrepreneurship' was relevant to Work Package 3b. Hence, it was decided that this area would be included under the subject of innovation policy under the research topic 'Intangibles and entrepreneurship'.

Most research in the area and most suggestions for future research are grouped under the headings 'Capital Market', 'Management' and 'Innovation Policy' while less research is related to 'Tax Effects'. This could be interpreted as lack of research in this area and thus that this subject would be relevant for a future research agenda. Based on discussions with users, however, we do not find an urgent need to make research into this area. This is partly due to the relative immaturity of the whole area as more urgent

issues regarding capital market, management and innovation policy need to be sorted out before a discussion of tax effects is relevant.

The four areas are rather broad and will comprehend a wide range of material. The literature used in the background report has been selected to ensure that the report will be as representative as possible with respect to the work done in the area.

2 Work package results and methodology

2.1 Methodology

As a first step, a draft report was prepared. The purpose of this report was to conduct a literature review presenting a very brief overview of the current status of research on intangibles in four areas – Capital Market, Management, Tax Effects, and Innovation Policy. A number of hot issues were formulated for each of the four areas. These hot issues formed the basis of the development of a questionnaire. The respondents were asked to give their opinion as to the importance for future research of each of the statements and to give their judgement of the current degree of knowledge in that specific area. Both statements were rated according to a 1-5 scale (i.e. a Likert scale). The reason for this is that some areas may be important for future research, but if research until now has provided substantial knowledge, future efforts should perhaps focus on other important areas where minor knowledge exists. The full questionnaire is included as an annex to the background report (Bukh *et al.* 2003).

The respondents were also asked to express their opinion as to which of the 39 hot issues they considered most important for future research. If the respondents were only to give their opinion on the 39 statements, they could potentially consider most of them important, thus complicating the data analysis. By asking them to prioritise, it gives us a more detailed picture of the respondents' opinion, and analysis will be easier and more subtle.

In the beginning of the questionnaire, the respondents are told to consider the five statements they find most important for future research while reading though the statements in order for them to be prepared when asked this question later on.

The questionnaire was distributed to all the people registered at the E*KNOW-NET, which ensures that all respondents had some knowledge of or at least interest in the subject dealt with in the questionnaire.

The e-mail list counted 340 people who were divided into two groups, i.e. a list of research centres which counted 232 e-mail addresses and a user e-mail listing which counted 108 e-mail addresses. The list was reduced to 335 because 5 addresses were listed twice. During August, this number was adjusted further since in some cases the e-mail could not be delivered for one reason or another.

The respondents received the questionnaire by e-mail and could return it by either e-mail, fax or mail. We hoped that this flexibility would make the response rate increase. The respondents received the questionnaire on August 2, and were given 9 days to complete and return the questionnaire after which a reminder was sent on August 14. Because of the low response rate, a final call for fulfilled questionnaires was sent individually to the E*KNOW-NET members on August 25 and 26. The final deadline to respond to this final call was on August 29. We postponed the data analysis to the September 3 hoping for a higher response rate. The response rate is shown in table 2.1.

	Number of questionnaires received	Number of invalid e-mail addresses	Number of mails which could not be delivered	Response rate
August,14th	18	37	22	7%
August, 25th	26	40	29	10%
September 3rd	37	40	36	14%

Table 2.1: Questionnaires sent out and response rate.

2.2 Survey Results

Even though the response rate increased by 50% from August 14 to September 3, the initially planned statistical analysis of the data could not be carried out. Instead, it was decided to present the results in tables and diagrams.

As the first step in the data analysis, the questions in each of the four areas were analysed separately by calculating the mean value of the answers to ‘Importance’ and ‘Degree of Knowledge’ with respect to each question. The next step was to calculate the difference between ‘Importance’ and ‘Degree of Knowledge’ for each respondent.

Calculating the average of these scores gives an indication of the knowledge gaps for each question. This is interesting because the greater the gap, the greater the need for future research on that particular subject. The ten largest gaps appear from figure 2.1

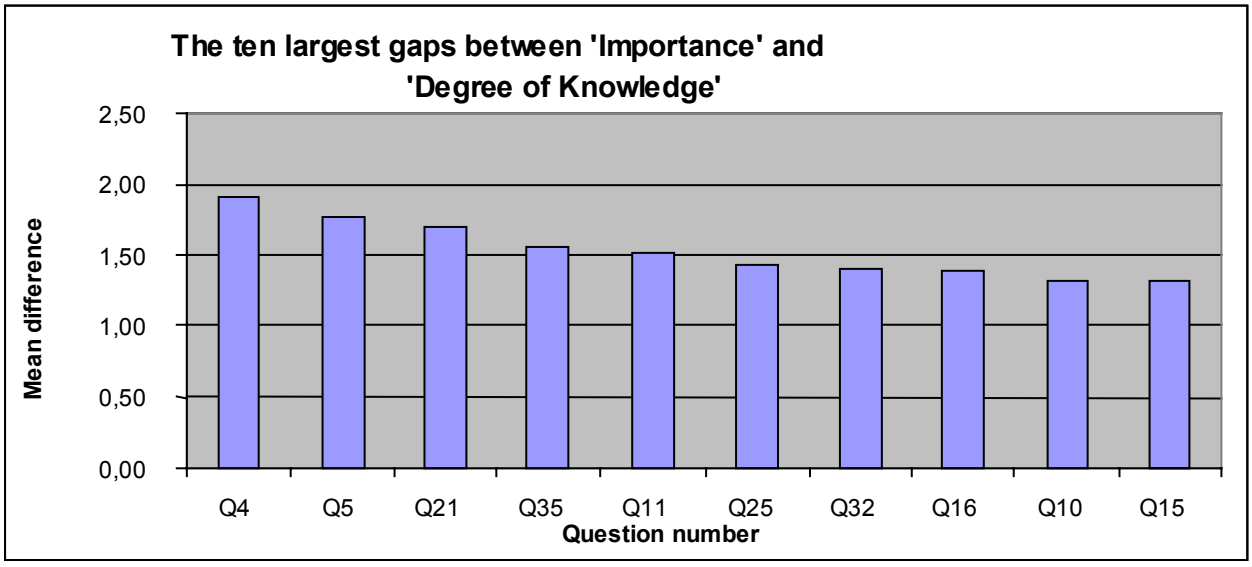


Figure 2.1: The ten largest gaps between 'Importance' and 'Degree of Knowledge'.

The conclusions from figure 2.1 are that future research should focus on ways:

- To resolve how measurement of intangibles, on the one hand, can be related to the individual firm while, on the other hand, there is a need for standardization of information in the IC reports (Q4)
- To integrate existing guidelines into a common framework for measuring and reporting on intangibles that will be accepted worldwide (Q5)
- To examine the relationship between intangibles and the performance of small and medium-sized enterprises (Q21)
- To facilitate the capital markets agents' understanding of non-financial information, e.g. information on intellectual capital, value drivers, and so on (Q35).

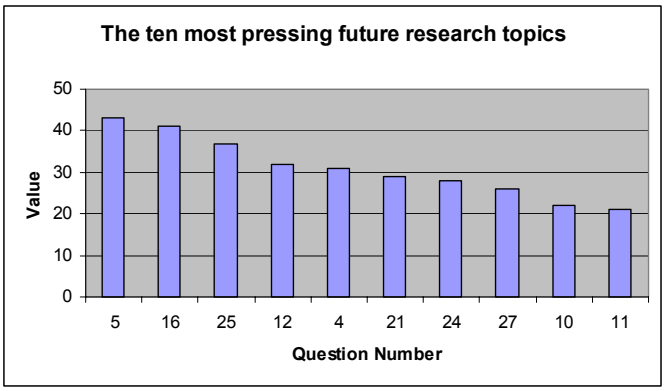
None of the gaps is inconsistent with the findings in the individual analysis of the four areas separately. The questions in top ten are all presented in the top of the figures of the first data analyses.

Top ten research topics can also be made for Q40 where respondents are asked to prioritise the questions according to relevance. This question is included in an attempt

to force the respondent to decide which questions are *the* most important for future research. The results of this should be in accordance with the results in figure 2.1.

Two different methods have been used regarding Q40 to analyse our sparse data material. First, each answer was given the value '1' irrespective of ranking regarding importance. The argument for the procedure is that it is difficult for the respondent to distinguish between the 39 questions and choose the order of importance. Therefore, it is preferable to assign the same value to all questions which the respondent found to be important.

In the second method used, a value has been assigned to each question in order to show the difference in importance of the questions. Here, the value '5' has been given to the most important question, '4' to the second most important one, etc. The top ten research topics from both methods are seen in figure 2.2 below.



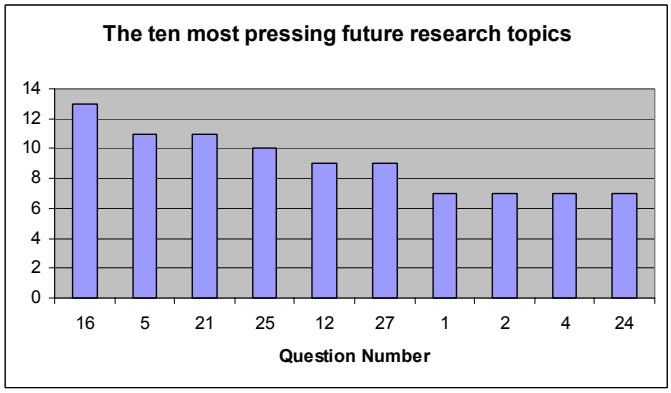


Figure 2.2: Top ten most important future research topics.

Figure 2.2 shows that the same questions are regarded more or less equally regardless of how the answers are coded. If these results are compared with figure 2.1, some differences exist. Q4, Q5, Q16, Q21 and Q25 are present in all three tables, i.e. these questions are certainly important for future research. Q10 and Q11 are in top ten in two of them. There is disagreement concerning the rest of the questions.

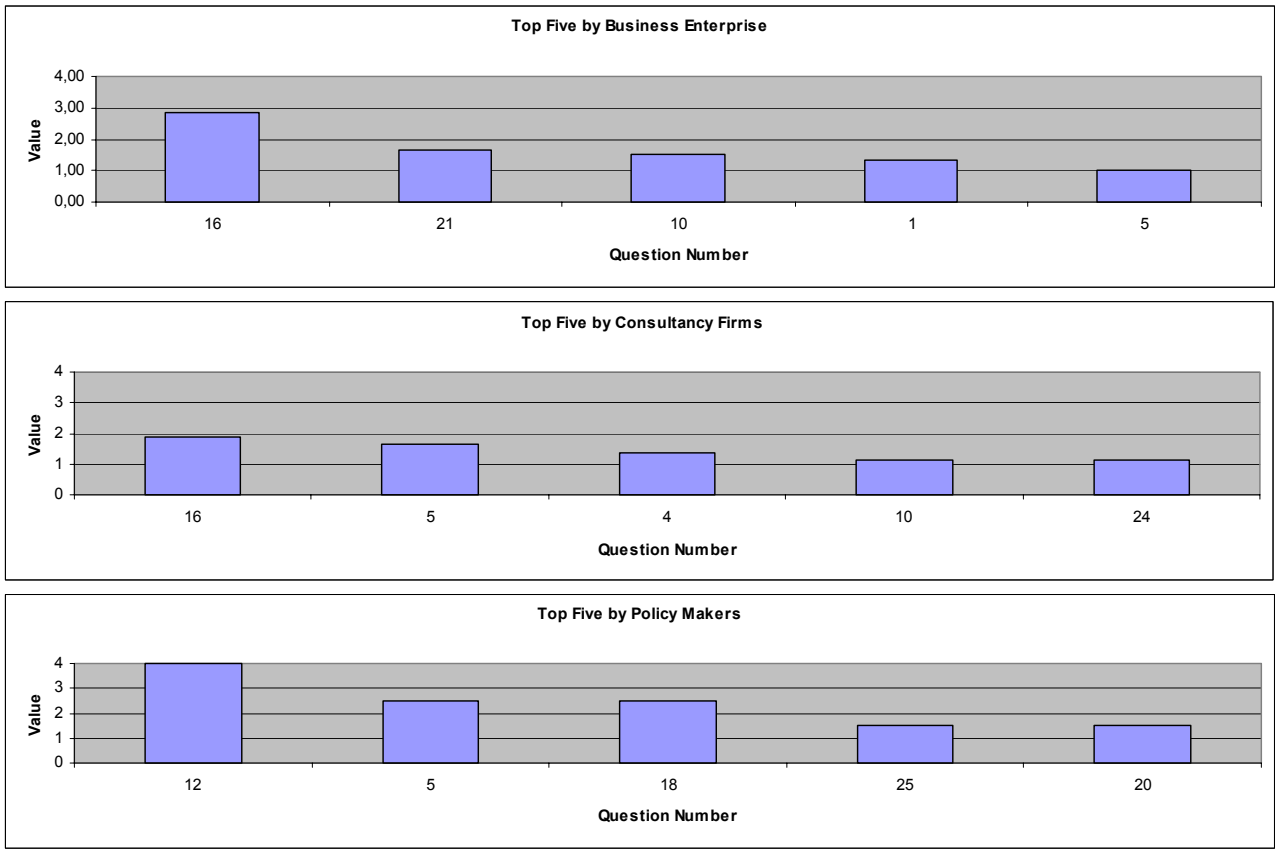
If one is to point out the top ten future research topics, figure 2.2 is preferable. The reason for this is that here the respondents are forced to decide which questions are most important. Also, the coded results are chosen, based on the fact that the differences in importance are clearer here.

Therefore, the conclusion from our survey is that the top ten future research topics are:

1. To integrate existing guidelines into a common framework for measuring and reporting on intangibles that will be accepted worldwide (Q5)
2. To study how innovative efforts, personal experience and skills can be integrated in order to improve firms' competitiveness (Q16)
3. To develop a set of Business Models that can structure information about intangibles and describe how they interact with the company's other assets and create value (Q25)
4. To assess which organizational factors stimulate or inhibit knowledge diffusion or learning (Q12)
5. To resolve how measurement of intangibles, on the one hand, can be related to the individual firm while, while on the other hand, there is a need for standardization of information in the IC reports (Q4)

6. To examine the relationship between intangibles and the performance of small and medium-sized enterprises (Q21)
7. To develop a consistent vocabulary to describe and define intangible assets (Q24)
8. To develop a set of standards for valuation of intangibles (Q27)
9. To determine which factors that firms rely on in determining the costs & benefits of knowledge management and how these factors are measured (Q10)
10. To assess changes in organizational learning that follow from knowledge management activities (Q11)

Figure 2.3 shows how different organisations have answered Q40: the five most important research topics.



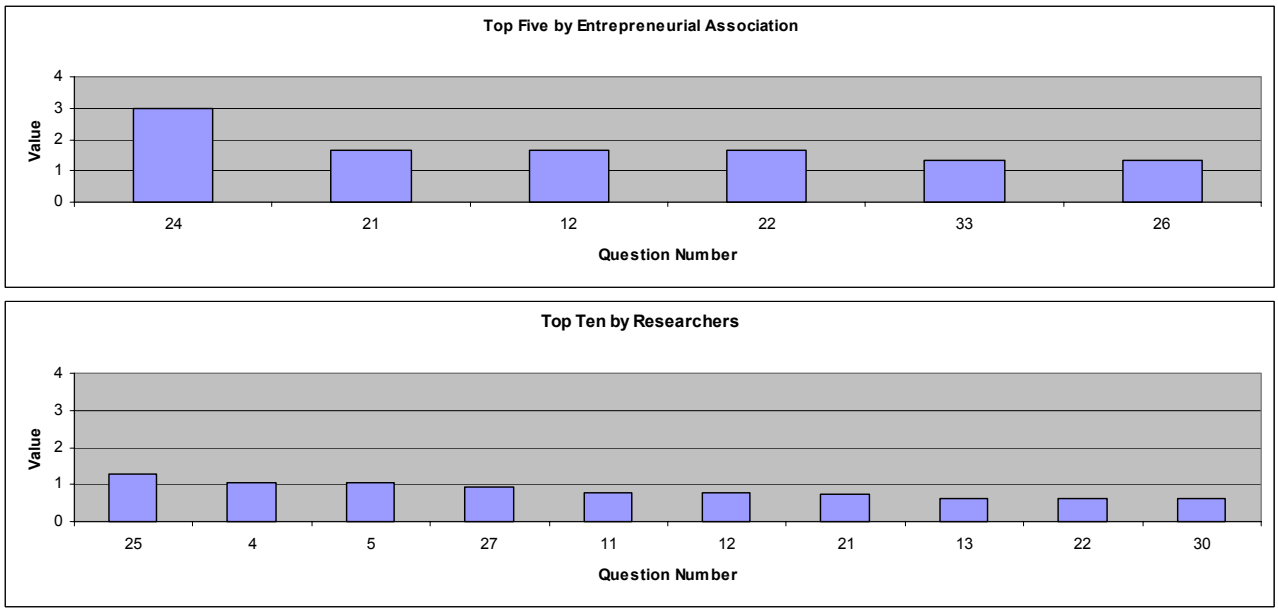


Figure 2.3: Top 5/10 by organisation.

The x-axis in figure 2.3 shows the question numbers found to be most important for future research by respondents from the different types of organisations. The y-axis shows a value calculated from the answers to Q40 by using the above-mentioned second method of assigning the values '5','4', etc. to each respondent's answers and then summing up the total value for each question. This value has been divided by the number of respondents in each of the five categories of organisations, resulting in the value in figure 2.3. This method was selected because the number of respondents in each category differs (Business Enterprises: 6, Consultancy Companies: 8, Policy Makers: 2, Entrepreneurial Associations: 3, Researchers: 18) and in order to be able to compare the 5 sub-tables in figure 2.3, this 'normalisation' needs to be made.

Interestingly, the figure shows that none of the questions are present at every "the top 5/10 by organisations". That seems to indicate that there is no obvious agreement as to which question is *the* most important one for future research.

As concluded at first in this section the most important question for future research is Q5. This is also the question, which is regarded important by most organisations by being present in 4 of the 5 sub-tables in figure 2.3. Only Entrepreneurial Associations do not have this question among top five; a category containing only 3 respondents. Also Q21 (the 6th most important one overall) is present at three of the organisations; not present at Policy Makers and Consultancy Companies. And Q12 (number 4 overall)

are found important by all types of organisations except for Consultancy Companies and Business Enterprises. The other questions shown on the overall top ten are only selected by one or two organisations. Q16, which is the second most important question at the overall top 10, is only regarded as important by Consultancy Companies and Business Enterprises. They, however, find this question the most important one for future research, which explains the high ranking on the overall top ten.

The overall number 3, Q25, is found important by Policy Makers and Researchers. Although it appears from figure 2.3 that a relatively small value (1.25-1.5) has been assigned to this question, the reason for its overall ranking is that it is considered most important by researchers who make up the organisation category with most respondents.

The immediate impression of figure 2.3 is that more disagreement exists among researchers (represented by the low values of the questions) as to which is the most important future research topic in comparison with the other organisations. The other organisations all have higher values, which indicate a higher level of agreement. One has to be careful with such an interpretation because eighteen researchers have answered the questionnaire compared to only two policy makers. Therefore, more data is needed to make such a conclusion.

It must be pointed out that although differences seem to exist among organisations, this is only an indication. Because of the low response rate, no statistically certain conclusion can be made. The indications given in figure 2.3 can, however, give us a more detailed picture of the most important future research topics, e.g. who is the target group of a given research effort?

3 Conclusions and Policy Implications

The aim of this work package is to summarise research in the area of intangibles with focus on suggestions for research on managing the hidden value of the company and to specify emerging trends and issues in the field. The report has been structured around four main themes: ‘Management’, ‘Innovation Policy’, ‘Capital Market’ and ‘Taxation’. Although these areas are certainly not mutually independent, we have tentatively grouped suggestions with respect to research needs in these areas.

As the first part of this work package, we conducted an extensive literature review of the four main themes. This resulted in a number of suggestions for future research and a number of hot issues were listed for each of the four areas. These suggestions and hot issues served as background documentation for the development of a questionnaire. The questionnaire was distributed among registered users at the E*KNOW-NET web site. To get as high a response rate as possible, both a reminder and a final call were sent to the respondents. But it was not possible to reach a high enough response rate to carry out the initially planned statistical analysis of the data and, therefore, the results were presented in tables and diagrams.

Based on the data analysis, ten important research topics were pointed out:

1. To integrate existing guidelines into a common framework for measuring and reporting on intangibles that will be accepted worldwide (Q5)
2. To study how innovative efforts, personal experience and skills can be integrated in order to improve firms' competitiveness (Q16)
3. To develop a set of Business Models that can structure information about intangibles and describe how they interact with the company's other assets and create value (Q25)
4. To assess which organizational factors stimulate or inhibit knowledge diffusion or learning (Q12)
5. To resolve how measurement of intangibles, on the one hand, can be related to the individual firm while, on the other hand, there is a need for standardization of information in the IC reports (Q4)
6. To examine the relationship between intangibles and the performance of small and medium-sized enterprises (Q21)
7. To develop a consistent vocabulary to describe and define intangible assets (Q24)
8. To develop a set of standards for valuation of intangibles (Q27)
9. To determine which factors that firms rely on in determining the costs & benefits of knowledge management and how these factors are measured (Q10)
10. To assess changes in organizational learning that follow from knowledge management activities (Q11)

Only very limited agreement was found with respect to the most important research questions among the four groups of respondents - Business Enterprises, Consultancy

firms, Policymakers, Entrepreneurial Associations and Researchers. The highest level of agreement seems to exist regarding the following questions:

- To integrate existing guidelines into a common framework for measuring and reporting on intangibles that will be accepted worldwide (Q5)
- To assess the which organizational factors which stimulate or inhibit knowledge diffusion or learning (12)
- To examine the relationship between intangibles and the performance of small and medium-sized enterprises (21)

Furthermore, it was demonstrated who the target groups of the presented future research topics are. An example is that integrating existing guidelines into a common framework for measuring and reporting on intangibles that will be accepted worldwide (Q5) is very interesting for respondents from organisations related to Business Enterprise, Consultancy firms, Policymaking and Researching, etc.

Although the response rate is too low to make specific conclusions, they can effectively be used to evaluate how the proposed future research topics in this report can help increase the knowledge of intangibles in the interest of people who work in Business Enterprises, Consultancy firms, Policymaking Areas, Entrepreneurial Associations and Researching in Europe.

It appears that there is a remarkable difference in opinion between researchers and various users of research results with respect to what they see as important areas for future research on intangibles.

We propose that this issue should be investigated in more detail, which could be achieved by repeating the survey on a larger scale where researchers and larger groups of e.g. companies and policy makers are addressed. However, the questionnaire probably needs to be supplemented with interviews of respondents in order to assess the implications of the difference in answers since we cannot a priori assume that any group of respondents is more right in its assessment of future research needs than another.

As a final remark, it should be noted that an important side effect of such a study could be the interest that the huge differences – if the results of this initial survey are confirmed – are likely to generate with respect to this area. It simply cannot be ignored that all groups in the survey show large gaps between the importance of the research

areas and the knowledge we have and that the huge differences between the areas researchers believe should be addressed and the areas other respondents perceive as important.

Therefore, the challenge to policy implications is to ensure a positive and rewarding future development in the field of intangibles in Europe, which can be done by focusing on the ten important research topics listed in this report. Although the statistical material for our conclusion is very limited, we propose that the European Commission takes the lead and supports the ten important research topics listed in this report.

4 Dissemination and Exploitation of Results

As the results are only available in the work package, they have not been disseminated. However, several initiatives have already been taken to ensure the dissemination of the results from this work package:

1. The background report will be issued in the working paper series from the Department of Accounting, Aarhus School of Business. Through the circulation of this working paper series, the report will have be widely distributed
2. Due to the inclusion in the working paper series, the background report will also be available through the Scandinavian Working Papers in Business administration (http://swoba.hhs.se/aaracc/)
3. The background report will be sent to all users who answered the report
4. The background report as well as this work package report will be available at the E*KNOW-NET web site
5. Results from the survey will be mentioned at various conferences, as was e.g. done by Professor Jan Mouritsen, Copenhagen Business School, at the PMA IC symposium, Crainfield, October 1-2, 2003
6. The questionnaire has been sent to the participants by the organisers (Crainfield University) of the PMA IC symposium
7. We are currently investigating the possibility of publishing the results from this work package as an article

8. Further, we are investigating the possibility of distributing the questionnaire to academic members of CIMA as well as practitioners in the UK in order to assess if research initiatives are currently addressing the right issue. In this respect we regard the questionnaire as a device for attention creation. This project will be undertaken by Crainfield University and Aarhus School of Business

9. The questionnaire's statements ranked 2 (personal skills and competences), 3 (business models) and 6 (SMEs) have already provided the basis for a research project application to the Norwegian Research Council (NFR) by the Norwegian E*Know-Net partner. This project investigates the role of the above intangibles in the transforming industrial SMEs in the graphical sector into knowledge-based service firms. This application will be submitted in an adjusted form at EU-level under the Collective Research call in April 2004, in combination with the graphical sector organisations of Norway, Sweden, Denmark, The Netherlands, Slovakia, and Italy.

10. Finally, we expect to revise the questionnaire and use it as part of the activities within the network of excellence called PRIME. This project will be undertaken by UAM and ASB.

Reference

Bukh, P.N., M.L. Chemnitz & L. Thisggard. 2003. Defining a research agenda regarding intangibles. *E*KNOW-NET*. Research report, Aarhus School of Business.