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Defining a research agenda regarding intangibles

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This report is part of the project 'A European Research Arena on Intangibles' (E*KNOW-NET, proposal No: STPN 2000-00005, call identifier: IHP-STRATA-00-01). The report has been prepared on behalf of the E*KNOW-NET members by Per Nikolaj Bukh, Mette Line Chemnitz and Lene Thisgaard (Aarhus School of Business). The report summarises the activities regarding work package 3b and is intended for discussion among the members of the E*KNOW-NET project and the steering committee.

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 management of intangibles. This is done by surveying how researchers, policy makers, consultants, practitioners in companies and other interested parties see the needs and possibilities for research in this area.

The first step towards the final report was to conduct a literature review where a very brief overview of the current status of research on intangibles in four areas - Capital Market, Management, Tax Effects and Innovation Policy - was presented. 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 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 each of the suggestions for future research and for their knowledge up till now. Since the response rate is not very high, the conclusions should be interpreted with care. However, the report concludes that the most important research topics in the future seem to be:

- To integrate existing guidelines into a common framework for measuring 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.

When the responses were grouped according to whether the respondent could be categorised as business enterprise, consultancy company, policy maker, entrepreneurial association or researcher, only limited agreements between the groups could be found with respect to other research topics. However, other areas that were also considered important 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, there is a need for standardisation of information in the IC reports
- 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 companies 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.

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1 Introduction

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

The main objective of the network - to create a European Research & Communication Arena on Intangibles – was addressed in the first work package where excellence centres as well as 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 by companies and its implications for Science, Technology and Innovation policy. In the second work package, the E*KNOW-NET activities resulted in a dissemination of previous research results to more than 11.000 companies and organisations through distribution of the MERITUM guidelines and information on previous research results by supporting institutions. Furthermore, almost 1.400 companies and organisations already using or potentially adopting the guidelines have been involved in different presentations and workshops on management and measurement of intangibles.

The aim of work package 3 is to promote 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 S/T policy with education policy. This report addresses the first part, i.e. the definition of a *research agenda regarding intangibles* that, on the one hand, suits the European research challenges better and, on the other hand, 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 policy making. The aim of this 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 done by first *reviewing existing literature regarding suggestions for future research*, secondly, by *surveying opinions* on possible research themes and, finally, by integrating suggestions from the literature and opinions into *a proposed research agenda*.

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

1.1 The term ‘intangibles’

In recent years, there has been an unprecedented increase in the use of the terms ‘intangibles’, ‘intellectual capital’, ‘knowledge’ or ‘knowledge resources’ with a variety of applications. Often the terms ‘intangibles’, ‘knowledge resources’ and ‘intellectual capital’ are used to refer to almost the same set of concepts. Both are applied to non-physical resources or activities that may or may not appear in corporate financial reports.

The E*KNOW-NET has taken the definition of intangibles and the classification that emerged as a result of the MERITUM project as a starting point. The term ’intangibles‘ is actually an adjective that goes along with different concepts, such as assets, investments, resources, etc. The definitions of ‘intangibles’ that can be found in the literature have, however, some features in common. They can be considered as sources of probable future economic profits lacking physical substance which are controlled or at least influenced by a company as a result of previous events and transactions (self-production, purchase or any other type of acquisition) and may or may not be sold separately from other corporate assets.

Intangible resources, according to Hall’s (1992) proposal, can be considered as ’assets‘ in a broad sense, i.e. intellectual property rights, trademarks, certain information technology such as data bases, networks, etc., and ’skills‘, i.e. capabilities and competencies, such as those of human capital. The intangible resources of a company, a static notion, can be measured at a given moment. Thus, worker competencies (human capital), intellectual property rights (structural capital), customer satisfaction or agreements with suppliers (relational capital) would belong to this category. These ’intangible resources‘ are likely to increase the future value of the company in general and its innovation capacity in particular.

Those resources can also be analysed in dynamic terms. Companies are undertaking activities to acquire or internally produce intangible resources, to sustain and improve existing ones and to measure and monitor them. Although the activities undertaken are assumed to be costly, companies are not always able to measure and keep track of those costs. These activities (intangible investments) are thus an allocation of resources which are sometimes not expressed in financial terms and which may or may not appear in the corporate financial reports. These intangible investments may give rise to new intangible resources or improve the value of existing ones (MERITUM 2002; 64).

Sometimes the resources and activities are classified into three different groups: a) human capital, b) structural capital and c) relational capital. Re a) human capital includes the knowledge, skills, experience and abilities of people. Some of this knowledge is very unique, some may be generic. Re b) structural capital comprises organisational routines, procedures, systems, cultures, databases, etc. Some of them may be legally protected and thus become intellectual property rights. Re c)

relational capital is defined as all resources linked with the external relationships of the company, such as customers, suppliers, R&D partners, etc.

This report surveys suggestions found in various parts of the literature with respect to areas that should be addressed in a research agenda regarding intangibles – both from a dynamic and a static perspective and comprising all categories of intangibles.

2 Methodology

As the work package takes the two previous activities in the E*KNOW-NET project as its starting point, it was planned that the report in conjunction with the use of previous discussions and results of analyses in especially activity 2 would take into account existing information from organisations such as EUROSTAT, OECD and statistical institutes on intangibles at a macro level and on their consequences to capital markets and economic growth. This scope has been enlarged so the 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, ABI/Inform, etc. where the key words 'intangibles', 'intellectual capital', 'capital market', 'tax', 'innovation' and 'entrepreneurship' were combined in various ways.

As a first step, a draft report was prepared. The purpose of this report was to conduct a literature review where a very brief overview of the current status of research on intangibles in four areas – Capital Market, Management, Tax Effects, and Innovation Policy were presented. The results of this survey are presented as the next part of this report together with emerging trends and issues in each of the areas. In each of the four areas, a number of hot issues are formulated. Some of the hot issues are stated in more than one section which reflects the fact that some of them are relevant for more than one area.

It was decided to limit the literature review to already published suggestions for future research. This means that we have made no attempt to survey the literally thousands of articles in the area to present our own opinion on the need for more research. Rather, we have drawn on others' syntheses of existing literature and empirical evidence.

The aim of the report is, therefore, to serve as background document for the discussion of this new research agenda among the members of the E*KNOW-NET. The report has been circulated among the E*KNOW-NET partners as well as the steering committee members, incorporating their improvements and suggestions. Accordingly, a questionnaire was developed and distributed among the users of the E*KNOW-NET web site to find the most important hot issues. Finally, this report

was completed with a discussion of differences between the results of the questionnaire and the initial literature review and conclusions are drawn with respect to the hot issues.

The report is structured around four sections – Capital Markets, Management, Tax Effects and Innovation Policy - which reflects the three original areas considered in the description of work package 3b (WP3b), and 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.

It has been discussed at E*KNOW-NET meetings 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 done regarding 'Entrepreneurship' was relevant to WP3b. 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 accordingly also most suggestions for future research – is grouped under the headings 'Capital Market', 'Management' and 'Innovation Policy' while less research is related to 'Tax Effects'. Although this could be interpreted as lack of research in this area and, thus, as an emphasis of a future research agenda, based on discussions with users we feel that the need for research into tax effects are not so urgent in the near future. 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 incorporated in this report in accordance with the research topics has been selected to ensure that the report will be as representative as possible with respect to the work done in the area. It should be emphasised that none of the four subjects include every research topic presented in the above figure. Only the topics most relevant to the specific area are included.

In order to summarise the discussions and produce clear policy conclusions, a workshop was organised. All institutions involved in the project (partners and members of the steering committee) were invited to participate. At this workshop, the results from the literature review as well as the questionnaire results were discussed and, finally, this report was completed.

The activities conducted are summarised in table 2.1.

Activities	**Time schedule**
Initial discussion of the working plan for activity 3b (Copenhagen meeting) among the members and steering committee	April 24, 2002
Literature review and incorporation of suggestions from members	November 2002 – June 2003

	2003
Presentation of draft report to members and steering committee	April 2, 2003
Preparation of draft report based on literature review	January 2003 – June 2003
E-mail draft report to members and steering committee for comments, suggestions regarding material to incorporate	June 3, 2003
Deadline for suggestions and comments	June 18, 2003
Final call for suggestions and comments	June 20, 2003
Revision of report	June 23 – July 10, 2003
Preparation of questionnaire	July 2003
Distribution of questionnaire to users	August 1, 2003
First deadline for responses to questionnaire	August 10, 2003
Follow up on non-responses	August 10, 2003
Initial statistical analysis of questionnaire data	August 1 – August 20 2003
Workshop in Madrid: Discussion of results	September 12 –13, 2003
Revised report incorporating initial results as well as tentative conclusions will be send to members and steering committee	September 25, 2003
Final report to be distributed to members	October 1, 2003
Final report from WP 3B	mid-October 2003

Table 2.1: Activities related to this report.

3 Management

Companies are facing new challenges posed by the knowledge society and this is likely to place new demands on management. The term 'knowledge-based economy' has become universal and it is generally accepted that the source of value creation increasingly is to be found in the creation and manipulation of information, knowledge and ideas. It is often stated that business rules are being

rewritten and that industrial era enterprise models are no longer adequate to meet the dynamic condition of a changing world market.

Many authors see the knowledge-based economy as calling forth a new managing approach (e.g. Allee 2000, von Krogh *et al.* 2002) where intangibles are in focus. Until now, a substantial amount of research has focused on how to identify and classify the greater hidden value of the company (Canibano & Sanchez 2003) and many frameworks have been suggested. It is, however, a remaining question whether companies know how to manage this important value in order to get the right values for future development.

The new business era has caused a new logic in how value is created in the new economy. Knowledge is becoming an increasingly important factor in value creation and it can therefore be argued that intangibles and intellectual capital have made an obvious entrance into most management areas. According to the research projects which this report is based on, it is most conveniently taken as a point of departure that management of intangibles can be split into three phases (Meritum 2001, DATI 2002, NIF 2001): Identification, measurement and monitoring of intangibles.

Some will argue that the framework proposed in the guidelines is too narrow because management of intangibles is also about enabling the creation of new intangibles or knowledge (von Krogh *et al*. 2002). We fully acknowledge this very important view and it must be kept in mind that the area of management of intangibles is quite a large area. Overall, the literature that we have been reviewing focuses on management. However, in this section we have chosen to group the suggestions for future research needs under the headings of 'Guidelines for identification and measuring of intangibles' and 'The role of intangibles in value creation'. The monitoring part is more related to the capital market area and will be taken up in that section.

3.1 Guidelines for identification and measurement of intangibles

In 2000, the Danish Guideline for 'Intellectual Capital Statements – *A Key to knowledge management'* was released. The guideline was a result of a collaboration of companies, consultants, government officials (Danish Agency for Trade and Industry) and researchers that had started in 1997. With this initiative, Denmark was the first country to develop a guideline for preparing intellectual capital statements. The release in 2000 was just the first phase of a large research project which in December 2002 ended with the publication of a revised guideline based on testing in more than 100 companies.

Experience from the participating companies' work with intellectual capital statements showed that it was quite a challenge, but not an impossible one. Experience also found that the intellectual capital statement leads to impressive results - both within the organisation and externally in relation

to customers, investors and society. The guideline presents a systematic review of the phases of preparing and structuring an intellectual capital statement. Managers can use the intellectual capital statement to draw attention to the development of the company's knowledge resources. The statement and the guideline are therefore useful tools for companies and managers who want to work systematically with knowledge resources and take optimum advantage of their knowledge resources. Even though a substantial amount of experiences has been built up and documented in Denmark, most parties involved find that more experience is still needed and important research topics could be:

Q1. To study experiences of firms which have worked with intangibles reporting for several years

Q2. To improve the guidelines for intellectual capital reporting based on firms' real experiences from working with the guidelines

In the summer of 2001, a Nordic project for measuring intellectual capital (Nordika) published its final report entitled '*Intellectual Capital – Managing and Reporting'*. The report was the main product of Nordika – a project on intellectual capital initiated by the Nordic Industrial Fund (NIF) in collaboration with a task force of government representatives and a round table drawn from business and professional associations in the Nordic countries. This project also presented a tool for developing intellectual capital reports in companies. It provided managers with an overview of possibilities and mainstream approaches to intellectual capital. The project helps managers learn what to look for and what they can learn from the experience of companies in the Nordic countries.

In September 2001, the FRAME, which is the abbreviated name for the 'joint framework for methods of knowledge management and communication', project was launched. FRAME builds on the results of the Nordic project NORDIKA. The aim of the FRAME project was to help managers in small and medium-sized companies to make the companies' knowledge resources more robust and measurable so that value created by knowledge resources can be isolated, managed and communicated.

A third guideline project is the Meritum project which is a collaboration of researchers from Copenhagen Business School, Research Institute of the Finnish Economy, Swedish School of Business, Stockholm University, Norwegian School of Management BI, Groupe HEC and IADE-Autonomous University of Madrid. The aim of this project, which was initiated in 1998, was to provide insight into the process of transforming intangibles into increased wealth: How are intangibles accounted for and managed and how do they contribute to growth and employment? Furthermore, the aim was to develop guidelines for the measurement and disclosure of intangibles. As a main outcome of the Meritum project, a guideline was published (Meritum 2002).

Some authors have compared the different guidelines (Bello 2002, Guimon 2003, Bukh & Johanson 2003) and have generally found that the DATI-guideline and the Meritum guidelines supplement each other. According to Bello (2002), the guidelines are likely to represent only a starting point which seems to be a relevant step on the way to create a more common framework where the standards will be harmonised into a coherent and commonly accepted set of guidelines. Bello therefore suggests that future research should address the following areas:

> Q3. To understand whether and to what extent the guidelines are consistent with the characteristics of the basic accounting elements as they are set in the conceptual frameworks issued by various standard setting bodies.

Further, she suggests that research should focus on the dilemmas that have been revealed during companies' work with guidelines in recent years, i.e.:

> Q4. To resolve how measurement of intangibles, on one hand, can be related to the individual firm while, on the other hand, there is a need for the standardization of information in the IC reports.

The project manager for NORDIKA, Henrik Jensen (Jensen 2001), proposes that there should be a common framework based on the existing IC approaches, taking advantage of the many company experiments. Since no such common framework for IC reporting exists and companies lack concrete models for measuring and recognised models for reporting, there is a need for integration. The multiplicity of approaches and models complicates the matter even though some of the terminologies and indicators overlap. Jensen proposed that the process for this common framework should be through large networks and international co-operation on external reporting, based on value in use and stakeholder interest. Accordingly, also Canibano & Sánchez (2003) have stated that future projects must take into account that there should be a harmonisation at world level, basically including the USA and Australia.

It is interesting that the Commission (2003a) actually encourages companies to measure and report their intellectual capital using the existing international guidelines. It is, however, suggested that prior to agreeing on some form of standardisation, the widespread uptake of intangibles must be regarded in a pragmatic way without favouring a particular guideline over another. Thus, a focus area for research could be:

> Q5. To integrate existing guidelines into a common framework for measuring and reporting on intangibles that will be accepted worldwide.

Chaminade and Johanson (2002) call attention to the difficulties faced by common guidelines in the area due to cultural differences. In a study of users' perceptions of the Meritum guideline, it was demonstrated that cultural differences might influence the experience and interest in IC among companies and that cultural differences also affect the way companies in different countries develop

IC reporting and IC management. Based on this, Chaminade and Johanson (2002) recommend that future development of guidelines for IC reporting has to address cultural differences and that an important research area could be:

> Q6. To examine cultural differences between countries and their impact on practices regarding intangibles and on the development of guidelines for intangibles reporting.

Further, it is important to examine whether measuring and managing intangibles really benefits companies. Researchers should start questioning the premise that intellectual capital measurement is always worthwhile. Otherwise, the research area will lose credibility because companies will start questioning the value of their intellectual capital measurement systems and research will never move beyond the stage of simply assuming that measurement of intangibles is worthwhile (Guthrie 2001, Lev 2001, Marr and Gray 2002). Further, in the introductory article of the special issue of AAAJ on intellectual capital, Guthrie *et al.* (2001) suggest that research needs to be conducted on the realm of intellectual capital. I.e. whether and how the techniques of intellectual capital management actually provide information that aids decision-making and in addition to that what types of decisions managers are in fact making based on this information. Thus, an aim for research should be:

> Q7. To evaluate the decision-making provided by the intellectual capital management and the manager's role in this process.

Another important area yet to be explored is that of adoption (Guthrie *et al*. 2001). It would be interesting to get an idea of why some companies use certain techniques over others and how companies get exposed to certain techniques and who makes the decision of adopting. Therefore, research should be conducted:

> Q8. To determine the motivation behind the adoption of intellectual capital management, measurement and reporting practices

3.2 The role of intangibles in value creation

It is most often stated that a new value creating logic is emerging and that there is an intimate relationship between value creation and new ways of accounting, measuring and reporting of knowledge as well as knowledge management. One of the premises for effective knowledge management is that knowledge assets, like other corporate assets, must be managed in a way where companies derive value from their investment in knowledge assets (Davenport & Prusak 1998, Edvinsson & Malone 1997, Stewart 1997).

Stewart *et al*. (2000) have also raised the question of whether assumptions regarding the pivotal role of knowledge in value creation have been well enough examined. The assumptions underlying knowledge management, i.e. that knowledge is worth managing, organisations benefit from

managing knowledge, knowledge can be managed and minimal risk is associated with managing knowledge, should according to Stewart *et al*. (2000) be questioned or at least examined more carefully. In addition to that, Guthrie *et al*. suggest that considerations among companies regarding costs and benefits of intellectual capital management systems should be considered. Thus, research topics should be:

Q9. To determine drawbacks associated with knowledge management

Q10. To determine which factors companies rely on in determining costs & benefits of knowledge management and how these factors are measured.

And especially with respect to the link between learning, learning organisations and knowledge management:

Q11. To assess changes in organisational learning that follow from knowledge management activities.

Q12. To assess which organisational factors stimulate or inhibit knowledge diffusion or learning.

Von Krogh *et al*. (2002) emphasise that knowledge management is not so much about managing in a narrow sense as it is about enabling creation of new knowledge. Well-functioning knowledge management includes facilitation of three kinds of activities: First, location and capturing of knowledge, secondly, knowledge sharing and, thirdly, enabling new knowledge creation. Several authors have put the third dimension on the agenda. But even though their work has been absolutely valuable to the understanding of knowledge creating processes and value creation of companies, a deeper understanding of the processes of knowledge creation and how they function in different national cultures, different companies and different academics disciplines is important. Thus, research should aim:

Q13. To develop theories of knowledge creating processes

Q14. To assess how knowledge creating processes differ between firms and across cultures.

Breuning & Skaret (2002) argue that many have assumed that the driving force of the knowledge society will be learning processes of the companies. These researchers present a framework attempting to visualise what to do with knowledge instead of just measuring existing knowledge. This suggests that a research focus should be:

Q15. To determining what kinds of process tools are required to facilitate the transformation of firms into a learning organization

4 Innovation policy

Innovation is without doubt a major factor behind economic growth and a precondition of an improved competitive position for most companies. Innovation research implies a fundamental study of change processes, knowledge development and knowledge integration for the purpose of generating new combinations (e.g. Johannessen *et al.* 1999). This section reviews research suggestions regarding resources needed to support innovation and growth and the value of innovation for companies since these issues relate to both measurement and management of intangibles in relation to innovation.

It should be noted that since knowledge and knowledge creation are closely related to innovation (Sveiby 1997, Drucker 1993, Nonaka and Takeuchi 1995), the suggestions in the previous section regarding 'knowledge and value creation' are also relevant when it comes to research regarding supporting innovation and growth which is surveyed in this section. Furthermore, research suggestions regarding disclosure of information on intangibles are reviewed in the section 'Capital Markets' although the same kind of information is also likely to form the basis of 'Innovation Policy'.

4.1 Knowledge management and innovation

Many companies are taking into account that new technologies and management approaches are changing the traditional perspective of managing intellectual resources (cf. Carneiro 2000). Referring to work by Harari (1994), Nonaka (1994) and West (1992), Carneiro states that companies that are able to stimulate and improve their human capital are indeed more prepared to face today's rapid changes and to innovate in the domain where they decide to invest and compete.

To improve the understanding of knowledge management and its possibility of influencing innovation and competitiveness, Carneiro concludes that innovation and competitiveness research must be oriented towards defining methods for measuring the degree of knowledge management effectiveness, developing effective strategies for integrating innovative efforts, professional experience, skills, interactive capacities to create value for a company's competitiveness and determining the means to capture, transfer and leverage knowledge effectively. According to these suggestions, important areas for future research could be:

Q16. To study how innovative efforts, professional experience and skills can be integrated in order to improve firms' competitiveness

Q17. To measure the relative importance of the factors that effect personal characteristics and knowledge development.

According to the European Innobarometer, qualifications of human resources, co-operation with suppliers and customers as well as the European dimension of innovation markets play a key role in the strengthening of companies' competitive position through innovation (European Commission 2002). Therefore, it has been stated that a main objective for the European countries should be the identification of actions that can leverage innovation.

This identification could take place by benchmarking national performance among the European countries against foreign 'good practice' and the future challenge might be to improve the European concept of innovation which takes the diversity of the phenomenon, distinctiveness, strengths and weaknesses of national innovation systems and in particular skills and knowledge that innovation demands into account. Accordingly, research areas would be:

Q18. To identify policy initiatives which have a leverage effect on innovation in specific countries

Q19. To improve and expand a European concept of innovation in order to take the diversity among the European countries even more into account.

It has also been indicated in a communication from the Commission that organizational innovations are new ways of organizing work that can have a positive influence on competitiveness. As it has been suggested long ago (Cañibano, Garcia Ayuso and Sanchez, 2000) this type of innovation is calling for a modification in the definition of innovation established by aslo Manual (OECD, 1996). Accordingly, new research areas would be:

Q20. To improve the conceptualization of innovation by providing adequate definitions and concepts of all the elements that make non-technological innovation possible.

4.2 Intangibles and entrepreneurship

According to Peña (2002), few authors have examined the influence of intellectual capital management on business performance and when it has been examined the focus has been on large, mature and public companies. In an article, Peña analyses to what extent intangibles are associated

with new company survival and growth. The study's results suggest that entrepreneurs' human capital elements such as education, business experience and level of motivation seem to be positively related to venture performance and also with respect to organisational capital (i.e. company capacity to adapt quickly to changes and ability to implement successful strategies). Finally, relational capital such as development of productive business networks and an immediate access to critical stakeholders are important intangible assets when it comes to venture performance.

Since Peña's study has only examined the relationship between IC elements and companies' performance on a sample of companies with limited size and characteristics, a suggestion for further research is:

Q21. To examine the relationship between intangibles and the performance of small and medium sized enterprises.

5 Capital markets

The main focus of this section is to review what research topics are being suggested in relation to the role of intangibles and reporting on intangibles on market efficiency in general. However, we emphasise two areas, 'knowledge and accounting' and 'disclosure of intangibles' because these topics seem most relevant in the discussion of improvement of market efficiency. Since research on intangibles has traditionally been associated with capital market research, the majority of the suggestions for future research surveyed in this report have been categorised under this heading.

Over the last decade, many researchers have noted that the information available in financial statements is not in accordance with the information requested by the market and this discrepancy is mainly due to the increasing amount and importance of intangibles in today's companies (e.g. Edvinsson & Malone 1997, Lev & Zarowin 1998, Leadbeater 1999, Upton 2001, Lev 2001). Traditional financial accounting provides few means to reliably value these intangibles (Leadbeater 1999) which has posed the question of whether financial reporting should (and could) be changed to incorporate the importance of intangibles (Upton 2001).

5.1 Capitalisation of intangible investments

Lev and Zarowin (1998) argue that the distortion in information is mainly due to the fundamental accounting principle of periodically matching costs with revenues. In reviewing the conceptual framework of FASB on the definition of assets, Lev & Zarowin (1998) see no reason why certain

types of intangibles should not be classified as assets. The IAS 38 on intangible assets applies specifically to intangible assets and states that intangible assets are to be capitalised only if the asset meets the definition of an intangible asset, if the economic benefits from the asset will flow to the company and the costs of the asset can be measured reliably.

The information deterioration, according to Lev and Zarowin (1998), will be overcome because the capitalisation of intangibles improves the matching of costs and revenues and because intangibles are now present in the balance sheet, representing the fact that they account for a major part of the company's assets. This is a way to improve market efficiency and bring more realistic earnings growth patterns (Lev 2001). However, the approach is inconsistent with IAS 38 which says that all expenditure on research should be recognised as an expense.

Upton (2001) agrees with the IAS 38 in believing that many intangibles are not assets and should therefore not be included in the balance sheet because they only partly satisfy the definition of an asset (e.g. the company cannot control employees and customers). On the other hand, Upton acknowledges that certain intangibles actually meet the asset's definition and that future research should focus on these assets. Therefore, there is a need

Q22. To conduct empirical research on the potential for capitalizing intangibles. (The types of intangibles, which can be capitalized and which cannot).

Blair and Wallmann (2000) believe that the debate of capitalising or expensing intangibles is misunderstood. The subject, they argue, is that investors demand information about a company's intangible assets. Whether this information is received from traditional financial statements or from other sources is a matter of secondary importance. Therefore, they believe in focusing on the development of supplementary forms of financial statements and on developing better value-based systems of accounting. In this context, it is noticeable that the Danish government has passed a law stating that Danish companies are obliged to report on their intellectual resources if they are of importance to the company. The interesting matter is that the focus here is not on valuing intangible assets, but on giving information as a supplement to the financial statement. This is different from the US approach where focus is on valuing intangibles in the balance sheet and integrating them in the financial statement as soon as a sales transaction has occurred (Daum 2001). According to Daum (2001), it would be of interest:

Q23. To examine investors' attitudes towards a reporting approach based on disclosure of information on intangibles vs. an approach where intangibles are capitalized.

5.2 Measuring and valuing intangibles

Intangibles offer powerful competitive advantages to many companies because they are difficult for competitors to imitate. This is also a main reason why they are so difficult to value and measure and why accounting is an issue of great difficulty and a topic of much discussion (Leadbeater 1999). The fact that intangibles *are* intangibles is a barrier to measurement and conversely the very lack of reliable measures is a barrier to discussions about intangibles. Thus, as a commentary to Lev (2001) Triplett ( ) suggests that focus should be on defining the concept of intangibles before measurement issues can be tackled. This point of view is shared by Guthrie *et al*. (2001) who argue that there is no consensus on '*what are intellectual capital and how could value creating intangibles be defined and classified*' (Guthrie *et al*. 2001, p. 367). Therefore, an important issue could be:

Q24. To develop a consistent vocabulary to describe and define intangible assets

Q25. 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.

However, intangible assets that cannot be controlled by the company can never be measured directly, Blair and Wallman (2000) claim. This, however, does not mean that information about intangibles should be excluded from investors. On the contrary, indicators should be identified and developed to help investors understand the role of these assets in the value creation of the company, a view also accentuated by recent European research (cf. Bukh 2003).

Daum (2001) suggests developing supplementary key performance indicators because key performance indicators often used by investors (e.g. ROA, ROE) miss the value of the intangibles in the denominator. Therefore, the evaluation of the company's performance and profitability is flawed, calling for providing investors with supplementary key performance indicators which include intangibles, i.e.:

Q26. To determine the kind of non-financial information that is needed by investors and analysts.

Many studies (e.g. Rossett 1998, Amir & Lev 1996, Barth *et al.* 1998, Deng & Lev 1998, Nichols 1994, Leadbeater 1999) have been conducted with suggestions to valuation of intangibles, such as human capital, customers, brands, R&D, and patents and intellectual property, but it seems that there are no agreement as to how to valuate them.

Another suggestion of valuation is to report intangibles at fair value (Upton Jr. 2001), i.e. the value at which they can be traded. The problem with this approach is that transferring intangibles are rarely undertaken which makes the judgment of a fair value rather subjective. The problem of subjectivity is perhaps not as serious as suggested above because many accounting rules include subjectivity too. The case of intangibles is that we do not have well-known rules to rely on and also lack experience and skills. To overcome this, it would be an idea to make a road map for some of the most defined classes of intangibles (Upton Jr. 2001).

On the basis of the above, it has been argued that it would be of great help to accountants if an agreed set of standards in how to valuate intangibles was made and therefore (cf. Guthrie *et al*. 2001) a research issue could be:

Q27. To develop a set of standards for valuation of intangibles.

However, both Leadbeater (1999) and Lev (2001) state that valuation of intangibles will remain a difficult task as long as there is no robust, open market where intangibles could be traded, e.g. an intangibles options market as suggested by Leadbeater (1999).

Accordingly, policy-makers, regulators and capital market participants should agree on institutional and legal changes to create these new markets. Leadbeater is aware of the fact that such a market is more easily attainable in connection with patents and intellectual property protection as with more tacit and organisational embedded knowledge. Also, he notices that trading intangibles requires a level of trust that is not necessary in trading standard commodities, that the market is thin and competition imperfect and that transaction costs are greater. Thus, research is required:

Q28. To examine whether a public and open market for intangibles can be developed.

Upton (2001) states that one of the most promising areas in valuation of intangible assets is based on real options valuation techniques which try to elaborate the intellectual rigor of options pricing models to valuation of intangibles, especially those under development which is a candidate for future research.

Q29. To evaluate the potential for using real options valuation techniques for intangibles.

5.3 The need for improved disclosure

In theory, the lack of disclosure on intangibles implies a higher cost of capital because improved disclosure of relevant information reduces information asymmetries as well as risk and, hence,

lowers companies' cost of capital. This is especially important in relation to initial public offerings where most underpricing models (cf. Jenkinson & Ljungquist 2001) predict that reduced ex ante uncertainty, for example by improved disclosure, reduces underpricing.

A high cost of capital leads to lower levels of investment, lower growth by the company and, therefore, companies with many intangible assets may find it hard to attract equity capital as well as loans (Leadbeater 1999, Lev 2001, FASB 2001). However, a more detailed understanding of the companies' motives for disclosure as well as analysts' and investors' need for information should be related to the companies' cost of equity capital. In this respect, Schrand & Verrecchia (2002) have demonstrated that greater disclosure frequency in the pre-IPO period is associated with lower underpricing as well as more traditional measures of a company's cost of capital as bid-ask spread and analyst forecast dispersion and Guo, Lev & Zhou (2003) provide evidence that the disclosure stage of product development, patent protection and venture capital backing in biotech IPO prospectuses subsequently lowers the bid-ask spread and stock return volatility.

Q30. To determine if improved disclosure of intangibles can reduce bid-ask spread, analyst forecast dispersion or lower stock return volatility.

And more specific with respect to initial public offerings:

Q31. To examine if improved disclosure can lower under-pricing of initial public offerings.

Mavrinac & Siesfeld (1997) call for research on the degree to which non-financial performance measures are demanded by investors, how they are used in decision-making, and from where the capital market wants this information. Although this has been addressed by recent research projects (e.g. Beattie & Pratt 2002; Beattie *et al.* 2002), it is often felt that more research is still needed, thus a research theme could be:

Q35. To examine how capital market agents understanding of non-financial information, e.g. information on intellectual capital, value drivers, and so on.

5.4 Standards for disclosure of intangibles

One way to promote more systematic disclosure practices is to develop standards for disclosure. Investors require additional information and devote substantial attention to the non-financial performance measures often presented in voluntarily disclosed information about intangibles. However, the value relevance of this information is doubtful (Lev 2001, Mavrinac & Siesfeld

1997). Bukh (2003) discusses the paradox that investors demand information, but when disclosed, they do not seem very interested in it. Further, it seems paradoxical that IPO prospectuses which are of great importance to investors and reports on intellectual capital disclose similar information concerning companies' intellectual capital (Bukh *et al*. 2003). Holland (2003) states that investors do in fact want to use the information, but experience difficulties in understanding the information provided by narratives, sketches, etc., which is often the case in intellectual capital statements. They expect that the information received can be compared with that of other companies and that it is reliable and objective. This suggests that research should aim:

Q32. To examine how intellectual capital reports can help investors make comparisons between companies.

Bukh (2003) suggests that research be conducted in a qualitative way in the form of qualitative studies of analysts' and investors' perception of the importance of disclosure about intangibles. A qualitative study should therefore be made, trying to understand the factors which explain the supply and demand of information on intangibles to give companies an idea of which information to disclose. Thus, future research could aim:

Q33. To develop links between intangibles and value creation that will facilitate the capital market agents' use of such information, e.g. through a business model perspective.

Amir & Lev (1996) argue that instead of focusing on global and timeless standards, regulators should try to make industry specific standards. Leadbeater (1999) supports this argument by speaking in favour of industry specific standards to augment, compliment, revise, and amend company accounts. The need for companies to experiment with disclosure on intangible assets is supported by Lev (2001), Leadbeater (1999), Blair & Wallman (2000), Lev (2001) as well as FASB (2001) who argue that a period in which companies experiment with different types of disclosure should be encouraged. Attempts to develop guidelines have already been made (e.g. MERITUM 2002, DATI 2000, DMSTI 2002) but still more research could be needed and especially efforts could be done:

Q34. To conduct focused experimentation with reporting on intangibles in various industries and types of firms.

Where FASB is mainly oriented towards the possibility of developing guidelines, Lev questions whether the experimentation works and how long it should proceed and calls for standards. Standards create a common language which the market will learn to understand. In Lev's opinion,

FASB, SEC etc. should commit themselves to doing so. A point of view also shared by Blair & Wallman (2000) is that sporadic and voluntary disclosure is not an adequate substitute for regular, quantitative, comparable and verifiable disclosure. Many of the attempts to develop a guideline on intangibles are in this report treated in the section on management which is the reason why specific disclosure suggestions on intangibles are not mentioned in this section.

Mouritsen (2003) also points to the fact that institutions are required and consensus about relevance has to be made regarding what he calls disentangled intangible assets (the types of intangible assets that can be separated from other assets). But as to entangled assets (those assets that cannot be separated; relationships between human, structural and customer capital) he strongly believes in understanding indicators against their specific purpose and not in the context of accounting rules. He dwells on the characteristics of the capital market and its participants and questions whether they are able to cope with information that is not institutionalised. Johanson (2003) shares this point of view and states that the obstacles are all about the ability of people to understand how knowledge resources work in a knowledge society.

This calls for new types of analysis and insight which might be difficult for the capital market to deal with because they are extremely numbers fixated. Further, Holland & Johanson (2002) think that modern financial theory is too oriented against logical, mechanical rules for stock valuation, but ignores the role of human, structural and customer capital. Garcia-Ayuso (2003) also believes that the financial markets should get used to analysing these new forms of information disclosed by companies on intangible assets. An obstacle for this might be the culture of financial analysts which is rather cynical, rational, materialistic, competitive and impersonal (Holland & Johanson 2002) and, thus, explains the focus on shareholder wealth, the narrow range of valuation, the reward systems designed around these numbers, models and aims. In summary, these authors suggest that more research should be conducted:

Q35. To facilitate the capital market agents' understanding of non-financial information, e.g. information on intellectual capital, value drivers, etc.

6 Tax effects

Even though tax is a very large expense category for which businesses must account in calculating their financial performance, taxation research represents a very small part of the accounting research field (Lamb & Lymer 1999). This is also the case when it comes to intangibles. Also here,

the main issue is related to the challenges that the new economy brings forward in relation to the difficulty of defining intangible asset value within acceptable and useful terms (Lymer & Onyekwe 2002). Very often, the tax area is often brought up or briefly mentioned when measurement on intangibles is discussed because it is rather unclear what is feasible and what consequences it will have.

6.1 Fair taxation and transfer pricing issues

As seen in the section concerning capital markets, the debate on whether to capitalise or expense intangible assets has gone on for quite some time. For tax accounting purposes, these 'investments' should be expensed which leads to an immediate reduction in current income and, thereby, a reduction in tax liabilities payable. If intangibles are recognised as assets, this will of course have the effect that a company with large investments in intangible assets will pay tax based on a lower reported income compared to a company with the same amount spent on tangible assets (Blair & Wallman 2000). Due to limited research in the area, a general statement about a research theme could be suggested:

Q36. Research is needed on tax effects of intangibles in general.

Or more specifically that research should aim:

Q24. To develop a consistent vocabulary to describe and define intangible assets

Q27. To develop a set of standards for valuation of intangibles.

Furthermore, in many countries it has been clear that a reform of the tax system on intangible assets is necessary simply because the present systems are not able to ensure effective, efficient, fair and convenient taxes which are key words in describing a modern tax system (Lymer & Onyekwe 2002). This, however, is not for the purpose of this report regarded as a separate research theme.

Another issue occupying researchers in taxation of intangible assets is that of transfer prices (Blair & Wallman 2000, Lymer & Onyekwe 2002, Walpole 2001). Because of the lack of a comparable and open market for intangibles, it is extremely difficult to judge whether fair and appropriate transfer prices for exchange of intangible assets have been established or whether deliberate attempts have been made as a way to secure the optimal tax outcome, i.e. inflating prices of intangible asset in a high tax country so that profits can be taken in a lower taxed country (Walpole 2001). Possible research themes are stated in the section regarding measuring and valuation in relation to capital market research, but it could be of separate interest in relation to taxation:

Q28. To examine whether a public and open market for intangibles can be developed.

Blair & Wallman (2000) note that, in the US, companies that increase their R&D investments relative to some base period are given a tax credit. This has also been proposed in other countries, e.g. Denmark (The Confederation of Danish Industries 2001). Blair & Wallmann (2000), however, speak against this favouring of intangible investments over tangible ones as they believe that this is an area where government should be neutral as opposed to the case in the section on capital markets where government interference was requested.

6.2 More effective capital allocation through tax incentives

An argument for allowing a tax incentive in order to improve R&D investment is the fact that such investments often benefit not only the company that made it, but also many others (Blair & Wallman 2000). This means that the social returns are much greater than the private returns to the company, implying a kind of market failure because investors are only interested in private returns. The question is whether this market failure should be corrected by tax incentives. In describing the proposed reform of the taxation of intangible assets in the UK, Sherman (2001) argues that if the government intervenes and makes a favourable taxation on intangible assets, a uniform treatment of all types of intangible assets will lead to a more efficient allocation of investments. Blair & Wallman (2000) call for more research on the impact of tax policy. Especially, it could be important:

Q37. To analyze if changes in taxation principles regarding intangibles could improve capital allocation within firms and increase firms' innovative activities.

Q38. To analyze if a more optimal capital allocation at a societal level can be obtained by tax incentives

6.3 Harmonisation of tax systems and cross-border problems

A major latent problem in the European community and a substantial barrier to the free movement of people and goods across borders is the differences in national taxation principles and levels. See also James (1999) and Adrian & Boshoff (2003) on tax competition issues.

Reforms have already taken place in the UK (more on the content of the reform in Inland Revenue 2002 and Walpole 2001) and it becomes clear that tax harmonisation must take place within the EU

in order to avoid tax competition (cf. James 1999, Adrian & Boshoff 2003). This is especially clear if one thinks about intellectual property rights. These rights can be transferred to a company's subsidiaries placed in a country with a favourable tax treatment of IC rights, positively affecting the company's bottom-line earnings (Adrian & Boshoff 2003). Because research on taxation of intangibles is in the making, detailed comparisons of different international systems regarding advantages and disadvantages have to be conducted and implications of the different systems have to be mapped (Lymer & Onyekwe 2002), thus an important research topic could be:

Q39. To conduct detailed comparisons of different international taxation systems' treatment of intangibles regarding advantages and disadvantages and the implications of these systems in order to achieve harmonization.

7 The survey

In the previous section, hot issues for future research were identified based on the literature review. 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 on each of these statements and to take a position on the degree of knowledge which they believe already exists in that specific area. Both of these are answered on a 1-5 scale (i.e. a Likert scale). Some areas may indeed be important for future research, but if research until now has given us a substantial amount of knowledge, future efforts should perhaps be focused on other important areas where minor knowledge exists. The full questionnaire is included as an annex to this report.

The respondents were also asked to express their opinion on which of the 39 hot issues is most important for future research. If the respondents were only to give his/her opinion on the 39 statements, they could potentially consider most of them important, thus complicating the data analysis. By asking which of them are most important, 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 because they are later asked this question.

7.1 The distribution and collection of questionnaires

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

The distributing e-mail list counted 340 people which were divided into two groups. A list of research centres which counted 232 e-mail addresses and a user e-mail listing which counted 108 e-mail addresses. At first, the list was adjusted for 5 e-mail addresses which were listed twice and therefore the number of respondents was 335. During August, this number was adjusted further because some of the e-mail addresses were invalid or mail couldn't be delivered to the respondent.

The respondents received the questionnaire by e-mail and were free to return it either by e-mail, by fax or by mail. This flexibility was hoped to increase the response rate. The respondents received the questionnaire by the 2nd of August and were at first given 9 days to complete and return the questionnaire after which a reminder was sent the 14th of August. Because of the low response rate, a final call for fulfilled questionnaires was send individually to the E*KNOW-NET members by the 25th and 26th of August. The final deadline to respond to this final call was the 29th of August. But we waited to conduct the data analysis to the 3rd of September in the hope to get a higher response rate. The response rate is shown in table 7.1.

	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 7.1: Questionnaires send out and response rate.

8 Presentation and discussion of survey results

Even though the response rate increased by 50% from the 14th of August to the 3rd of September, 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.

8.1 Management, Innovation, Capital Markets and Tax Effects

As the first step in the data analysis, the questions in each of the four areas were analysed separately by calculating the mean value for the answers to 'Importance' and 'Degree of Knowledge' with respect to each question. The questions 1-15 all refer to the suggestions for future research found in the section about management, and the results are shown in figure 8.1 where the questions are sorted according to the average importance of the research questions.

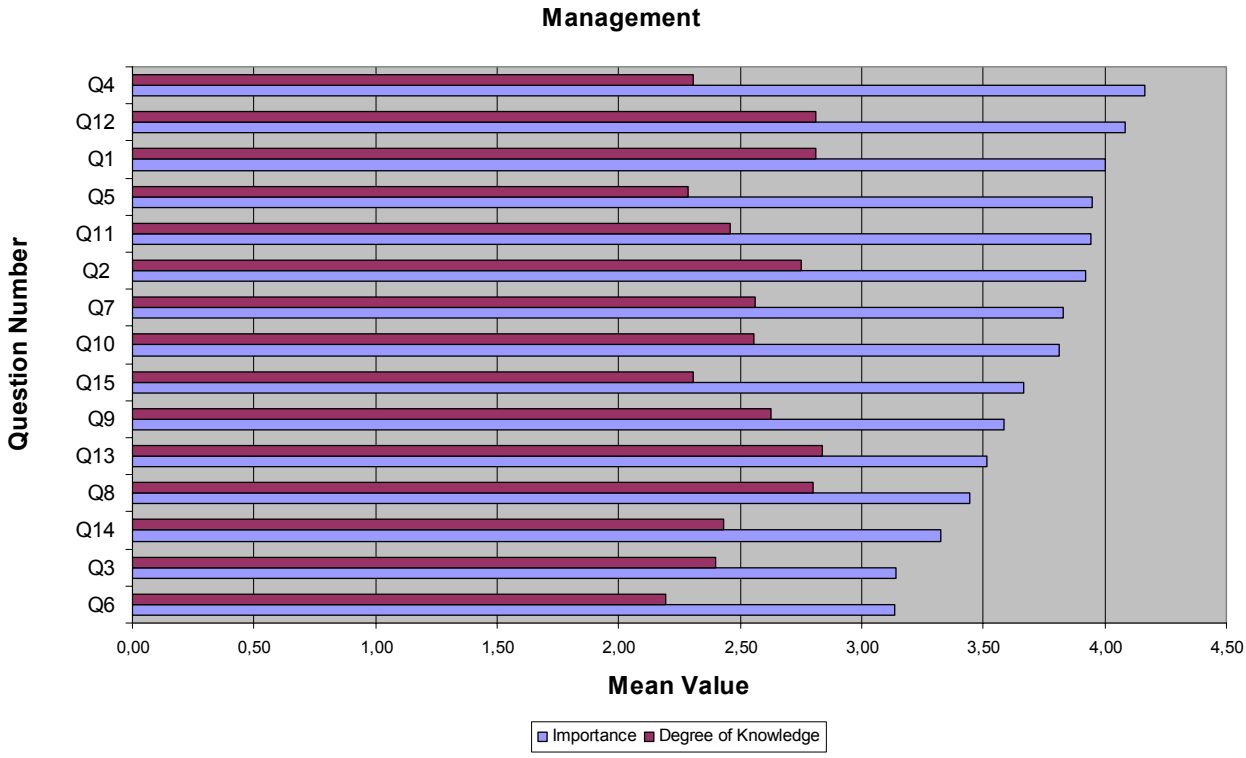

Figure 8.1: Management- average importance and degree of knowledge that already exists.

Figure 8.1 shows that most questions concerning management are found more or less important with an average importance score varying from 3.14 (Q 3 and Q6) to 4.16 (Q4). The mean score for 'Degree of Knowledge' varies for each question from 2.19 (Q6) to 2.84 (Q13) which indicates that a relatively low degree of knowledge exists on the research questions that were identified in the literature survey. The figure also indicates the magnitude of the gaps between 'Importance' and 'Degree of Knowledge'. Especially, Q4 and Q5 show large gaps.

Taken separately, areas with a high research potential and high potential for relevant contributions to the body of research-based knowledge in the area of management of intangibles can tentatively be stated as:

- To resolve how measurement of intangibles, on one hand, can be related to the individual 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)

These research questions scores high on the stated relevance of the research question and have a large knowledge gap. Again, it should be noted that a careful interpretation is necessary because of the limited number of questionnaires returned and because the combination of the assessment of relevance and degree of knowledge as done above will always impose some subjectivity into the conclusion.

The other three areas of the research agenda were dealt with in a similar manner and the results from 'Innovation' and 'Capital Markets' which represents Q16-Q21 and Q22-Q35, respectively, can be seen in figure 8.2 and 8.3.

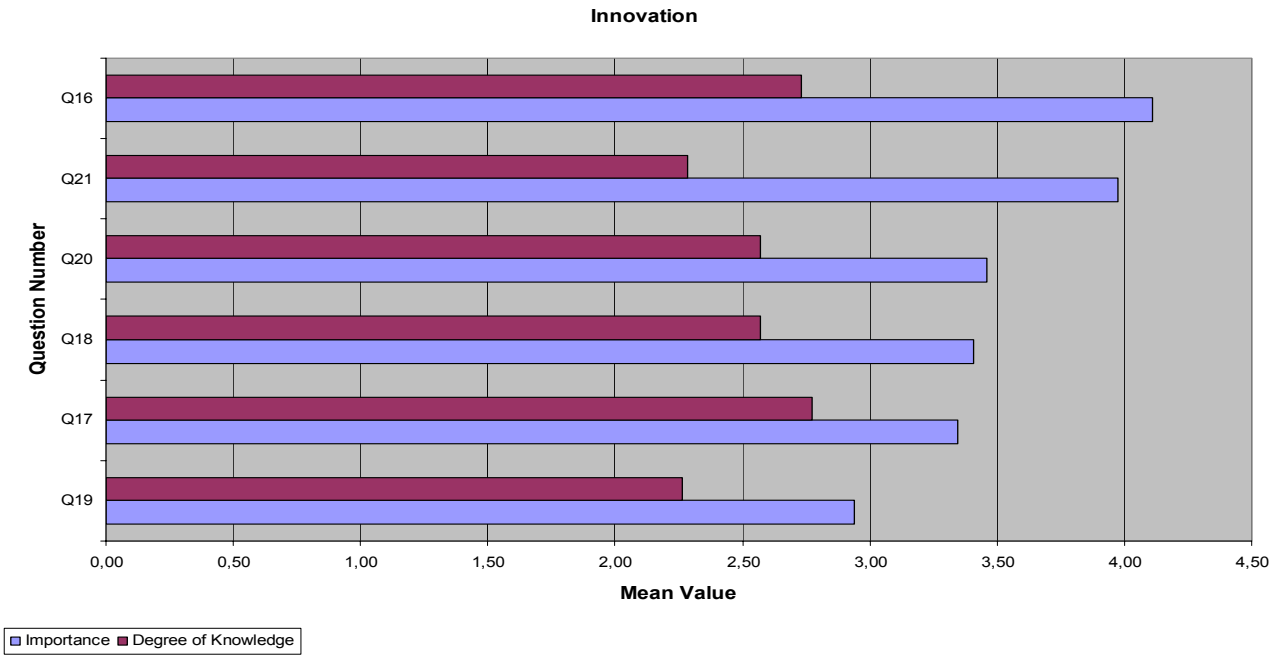

Figure 8.2: Innovation - *average importance and degree of knowledge that already exists.*

From figure 8.2 it appears that all 6 questions concerning 'Innovation' are regarded as more or less important, ranging from 4.11 (Q16) to 2.94 (Q19), and the 'Degree of Knowledge' is also relatively low, ranging from 2.26 (Q19) to 2.77 (Q17). The two most important questions for future research are:

- To study how innovative efforts, professional expertise, and skills can be integrated in order to improve firms' competitiveness (Q16), and
- To examine the relationship between intangibles and the performance of small and medium-sized enterprises (Q21).

These questions also have the largest gaps and tentatively it can be concluded that future research regarding 'Innovation' should concentrate on these two areas.

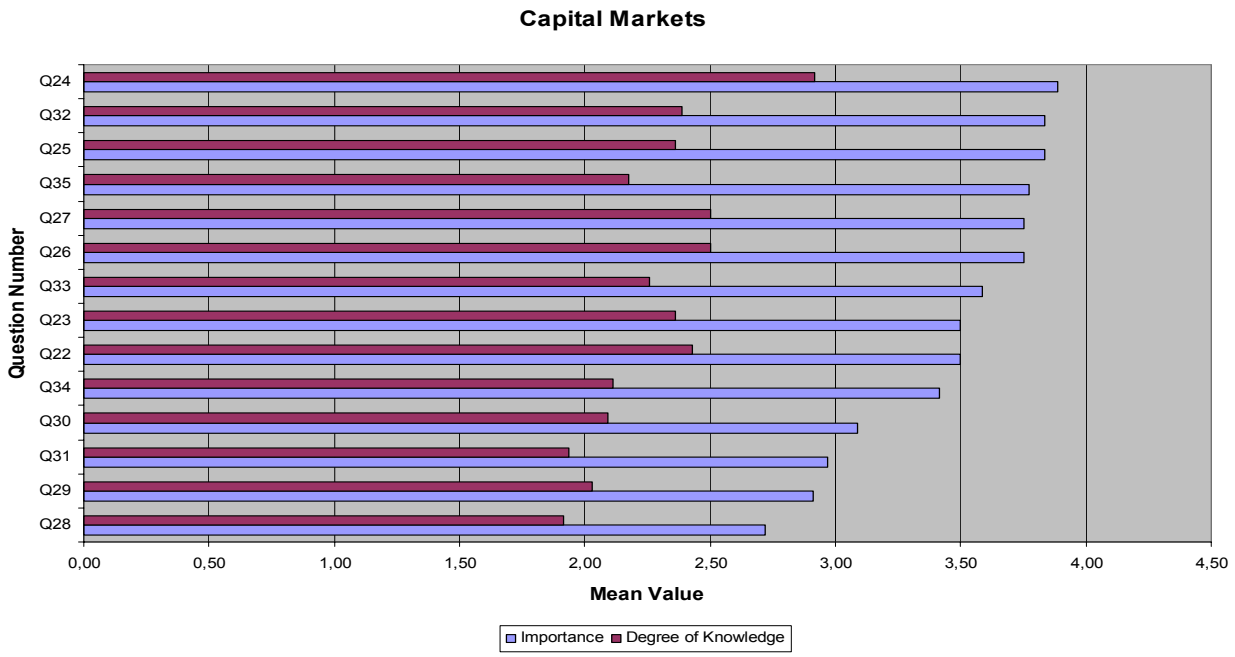

Figure 8.3: Capital Markets - *average importance and degree of knowledge that already exists.*

Figure 8.3 shows the results regarding 'Capital Markets' and it is noticed that it is difficult to point out exactly which question is most important because the values Q24, Q32, Q25, Q35, Q27 and Q26 are almost the same. The scores on 'Importance' range from 3.89 (Q24) to 2.72 (Q28). It is noticed that the answers of 'Degree of Knowledge' are slightly lower than 'Innovation' and 'Management' ranging from 1.92 (Q28) to 2.92 (Q24) which means that we know relatively less

about ‘Capital Markets’. On the other hand, research does not seem to be as important as in ‘Management’ and ‘Innovation’. Again, the gaps give us an idea about which questions future research ought to concentrate on, and from figure 8.3 it can be concluded that these are:

- To examine how intellectual capital reports can help investors make comparisons between companies (Q32)
- 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)
- To facilitate the capital market agents’ understanding of non-financial information, e.g. information on intellectual capital, value drivers, and so on (Q35)

Figure 8.4 shows the last category ‘Tax effects’ where the values of ‘Importance’ and ‘Degree of Knowledge’ are all lower than the other categories. The highest value of ‘Importance’ is 3.15 and 2.14 of ‘Degree of Knowledge’ (both Q36), lowest value is 2.94 (‘Importance’) and 1.82 (‘Degree of Knowledge’) (both Q38), i.e. we know little about tax effects, but, on the other hand, these issues are not considered very important. The conclusion, therefore, is that research concerning ‘Tax Effects’ is not urgent.

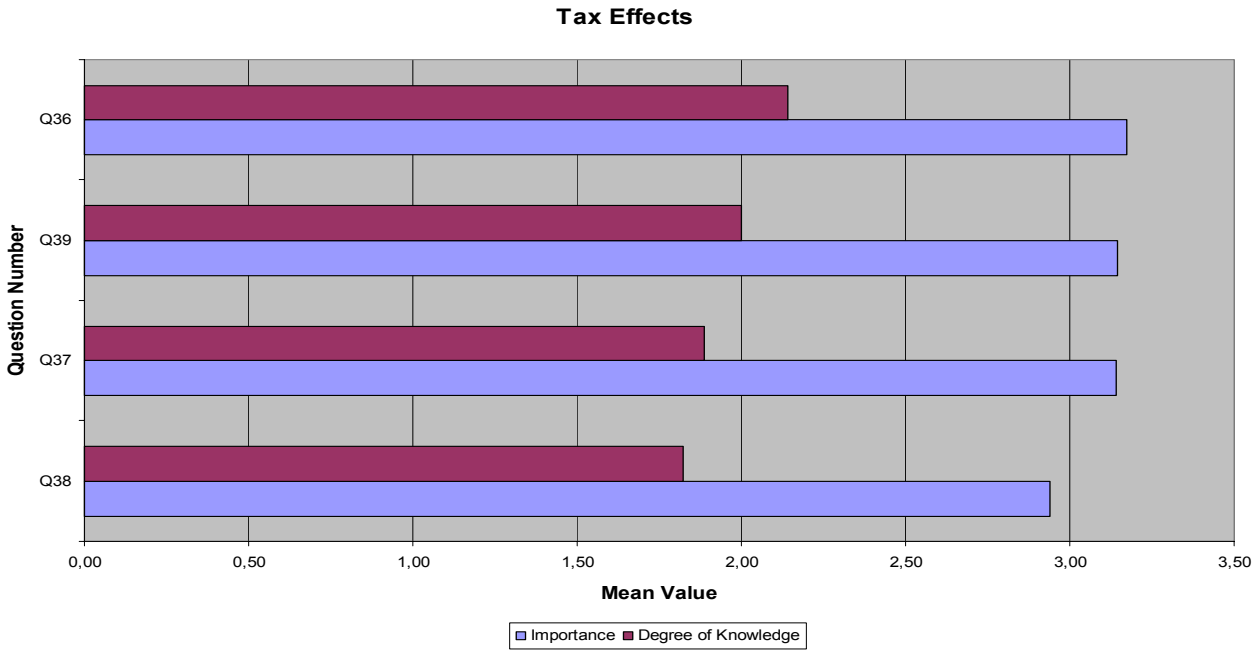

Figure 8.4: Tax Effects - *average importance and degree of knowledge that already exists.*

8.2 Top ten research topics.

For each respondent and each question, the difference between 'Importance' and 'Degree of Knowledge' has been calculated. Calculating the average of these scores gives us 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 certain subject. The ten greatest gaps appear from figure 8.5.

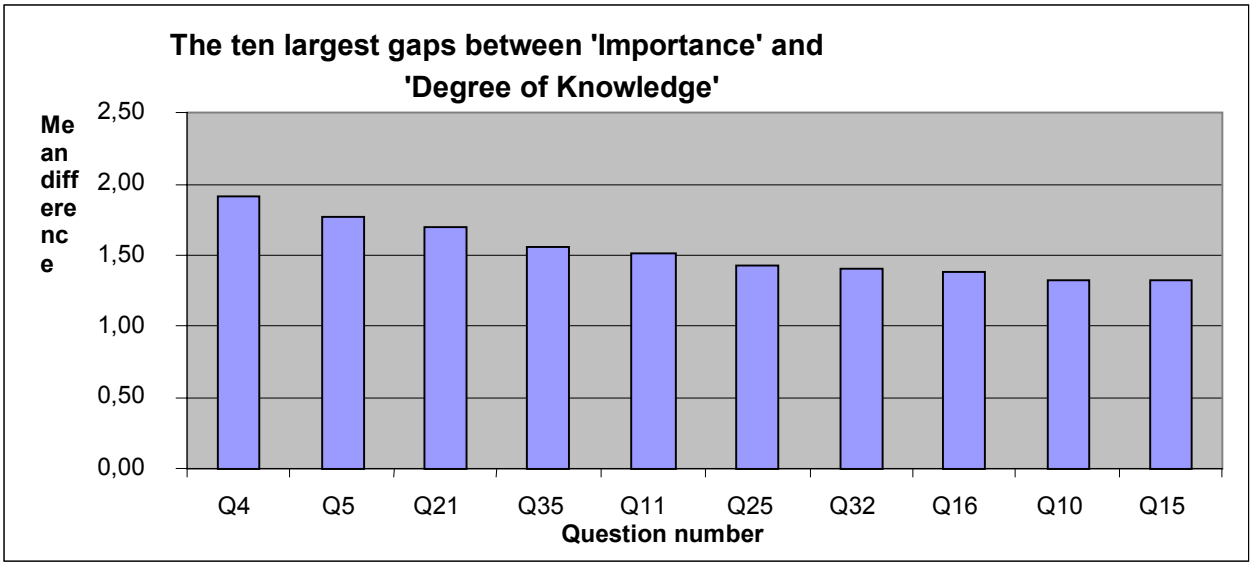

Figure 8.5: The ten largest gaps between 'Importance' and 'Degree of Knowledge'.

From figure 8.5 it appears that the two largest gaps are Q4 and Q5. It already appeared under 'Management' that these two questions had large gaps. The third and fourth largest gaps are Q21 and Q35 which are also consistent with the tentative conclusions in section 8.1 Therefore, the conclusion from this partial perspective is that future research should very much focus on how:

- 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.

None of the gaps are inconsistent with the findings of figure 8.1- 8.4. The questions in top ten are all presented in the top of the tables. However, Q10 and Q15 are relatively low on 'Importance' in table 1, but they have a low score on 'Degree of Knowledge' which makes their appearance in 'top ten' less surprising.

Top ten research topics can also be made for Q40 where respondents are asked to indicate which questions they find most relevant, second, third, fourth and fifth most relevant. This question is asked 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 from figure 8.5.

Two different methods have been used regarding Q40 to analyse our sparse data material. First, each answer was given the value '1', i.e. regardless of whether the question has been ranked as the most important or the fifth most important question, the value is'1'. 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 better to assign the same value to all questions that are found important by a respondent.

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 8.6 below.

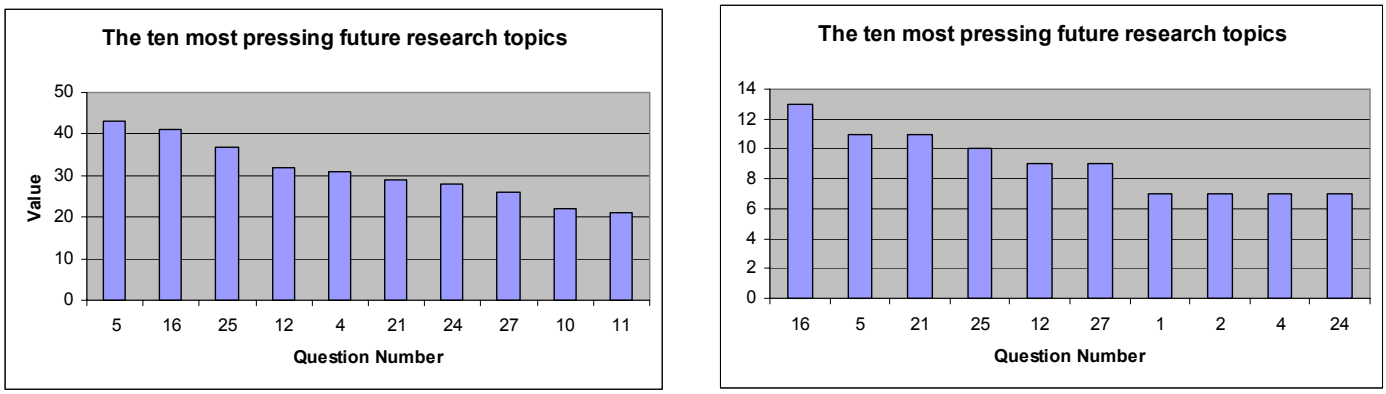

Figure 8.6: Top ten most urgent future research topics.

From figure 8.6 it appears that the same questions are regarded as more or less the same, regardless of how the answers are coded, and the differences (Q1, Q2, Q10, and Q11) are not even in top 6.

If these results are compared with figure 8.5, 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. Concerning the rest of the questions, disagreement exists.

If one is to point out the top ten future research topics, figure 8.6 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)

8.3 Differences in perception among user groups

Figure 8.7 shows how different organisations have answered Q40: the five most urgent research topics.

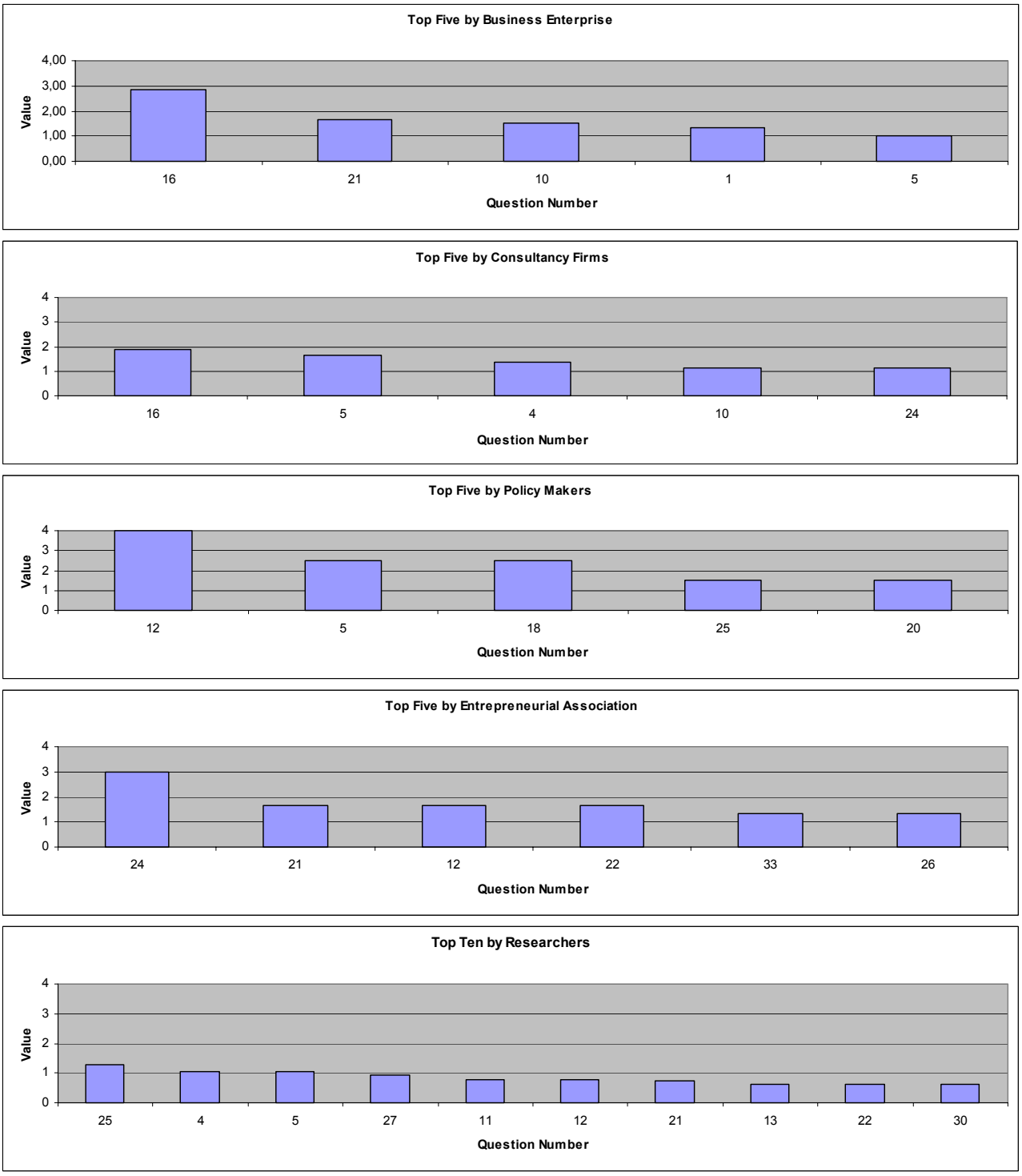

Figure 8.7: Top 5/10 by organisation.

The x-axis in figure 8.7 shows the question numbers found to be most important for future research by respondents from the different categories 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 5 categories of organisations, resulting in the value in figure 8.7. This is done because the number of respondents in each category is very different (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 8.7, this 'normalisation' needs to be made.

Interestingly, the figure shows that none of the questions are present at the top 5/10 by all organisations. That seems to indicate that limited agreement exists among all groups as to which question is *the* most important one for future research.

As concluded in section 8.2, 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 8.7. Only Entrepreneurial Associations do not consider this question among top five; a category containing only 3 respondents. Also Q21 (overall the 6th most important one) is present at three of the organisations; not present at Policy Makers and Consultancy Companies. And Q12 (overall number 4) are found important by all types of organisations except by Consultancy Companies and Business Enterprises. The other questions shown on the overall top ten are only found at 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 8.7 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 are the organisation category with most respondents.

The immediate impression of figure 8.7 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 8.7 can, however, give us a more detailed picture of the most urgent future research topics, e.g. who is the target group for a given research?

9 Conclusion

The aim of the report is, on the one hand, to summarise research in the area with a focus on suggestions for research on managing the hidden value of the company and, on the other hand, 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 in 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. Most agreement seems to exist on 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 which organizational factors 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 world wide is very interesting for respondents who are in an organisation which is related to Business Enterprise, Consultancy firms, Policymaking and Researching, etc.

Although the response rate is too low to arrive at 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.

By surveying the opinions of researchers and various groups of users of research results with respect to what they see as important areas for future research, it appears that there are remarkable differences between how European researchers in the area of intangibles see the important areas for future research and what areas users perceive as important.

We propose that this issue should be investigated in more detail which could be done, on the one hand, by repeating the survey on a larger scale where researchers and larger groups of e.g. companies and policy makers are addressed. On the other hand, 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. For all the groups surveyed, such large gaps between the importance of the research areas and the knowledge we have – and the huge differences between the areas researchers believe should be addressed and the areas other respondents perceive important – can simply not be ignored.

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 encourages the ten listed important research topics in this report.

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Dear Member of E*KNOW-NET

This questionnaire is part of the E*KNOW-NET project and aims at proposing a research agenda regarding Intangibles. In order to do this we have conducted an extensive literature review around four important areas for research on Intangibles; Management, Innovation Policy, Capital Markets, and Tax Effects at the Aarhus School of Business. This has resulted in a number of suggestions for future research. These suggestions are indicated as statements in the questionnaire. Included in the questionnaire are also a few questions concerning the need for training and education.

We would like **Your opinion** as to the **importance** of each of these statements for future research and for the **knowledge up till now**.

COMPLETING THE QUESTIONNAIRE

If you find some of the questions to be inappropriate or confusing please skip them and continue with the rest of the questionnaire. We are interested in all your responses so please return the questionnaire to us even if it is not fully completed. Questionnaires will be analysed at the Aarhus School of Business and only aggregated results will be released. No company or individual will be identifiable.

Please return the completed questionnaire by the 10th of August:
by **email** to melc@asb.dk
by **fax** to: +45 8615 1290
or by **mail** to:
BDO Professor Per Nikolaj D. Bukh,
Department of Accounting, The Aarhus School of Business,
Fuglesangs Allé 4, DK-8210 Aarhus V, Denmark

THANK YOU FOR YOUR TIME AND EFFORT

Aarhus School of Business
Handelshøjskolen i Århus
Department of Accounting

For each of the following statements, please indicate how **important** they are for future research and the **degree of knowledge** that already exists on that specific subject.

While reading through the statements, please consider which of them you find the most important, because you will be asked to give your opinion on this issue later

In answering the questions use the following scales:

	Importance		Degree of Knowledge
1	Unimportant	**1**	Very Low
2	Of minor importance	**2**	Low
3	Somewhat important	**3**	Medium
4	Important	**4**	High
5	Very Important	**5**	Very High

If you return the questionnaire by email you may highlight the answer by using the highlighting function in Word.

SECTION 1 - MANAGEMENT

		Importance	Degree of Knowledge
Q1	To study experiences of firms which have worked with intangibles reporting for several years	1 2 3 4 5	1 2 3 4 5
Q2	To improve the guidelines for intellectual capital reporting based on firms' real experiences from working with the guidelines	1 2 3 4 5	1 2 3 4 5
Q3	To understand whether and to what extent the guidelines are consistent with the characteristics of the basic accounting elements as they are set in the conceptual frameworks issued by various standard setting bodies	1 2 3 4 5	1 2 3 4 5
Q4	To resolve how measurement of intangibles on 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	1 2 3 4 5	1 2 3 4 5
Q5	To integrate existing guidelines into a common framework for measuring and reporting on intangibles that will be accepted worldwide	1 2 3 4 5	1 2 3 4 5
Q6	To examine cultural differences between countries and their impact on practices regarding intangibles and on the development of guidelines for intangibles reporting	1 2 3 4 5	1 2 3 4 5
Q7	To evaluate the decision-making provided by the intellectual capital management and the manager's role in this process	1 2 3 4 5	1 2 3 4 5
Q8	To determine the motivation behind the adoption of intellectual capital management, measurement and reporting practices	1 2 3 4 5	1 2 3 4 5
Q9	To determine the drawbacks associated with knowledge management	1 2 3 4 5	1 2 3 4 5
Q10	To determine which factors that firms rely on in determining the costs & benefits of knowledge management and how these factors are measured	1 2 3 4 5	1 2 3 4 5
Q11	To assess changes in organizational learning that follow from knowledge management activities	1 2 3 4 5	1 2 3 4 5

In answering the questions use the following scales:		**Importance**		**Degree of Knowledge**
		1 Unimportant		**1** Very Low
		2 Of minor importance		**2** Low
		3 Somewhat important		**3** Medium
		4 Important		**4** High
		5 Very Important		**5** Very High
Q12	To assess which organizational factors stimulate or inhibit knowledge diffusion or learning	1 2 3 4 5		1 2 3 4 5
Q13	To develop theories of knowledge creating processes	1 2 3 4 5		1 2 3 4 5
Q14	To assess how knowledge creating processes differ between firms and across cultures	1 2 3 4 5		1 2 3 4 5
Q15	To determine what kinds of process tolls are required to facilitate the trans-formation of firms into a learning organization	1 2 3 4 5		1 2 3 4 5
SECTION 2 - INNOVATION				
		Importance		**Degree of Knowledge**
Q16	To study how innovative efforts, professional experience and skills can be integrated in order to improve firms' competitiveness	1 2 3 4 5		1 2 3 4 5
Q17	To measure the relative importance of factors that affect personal characteristics and knowledge development	1 2 3 4 5		1 2 3 4 5
Q18	To identify policy initiatives which have a leverage effect on innovation in specific countries	1 2 3 4 5		1 2 3 4 5
Q19	To improve and expand a European concept of innovation, in order to take the diversity among the European countries even more into account	1 2 3 4 5		1 2 3 4 5
Q20	To improve the conceptualization of innovation by providing adequate definitions and concepts of all the elements that make non-technological innovation possible	1 2 3 4 5		1 2 3 4 5
Q21	To examine the relationship between intangibles and the performance of small and medium-sized enterprises	1 2 3 4 5		1 2 3 4 5

SECTION 3 - CAPITAL MARKETS				
		Importance		**Degree of Knowledge**
Q22	To conduct empirical research on the potential for capitalizing intangibles. (The types of intangibles which can be capitalized and which cannot.)	1 2 3 4 5		1 2 3 4 5
Q23	To examine investors' attitudes towards a reporting approach based on the disclosure of information on intangibles vs. an approach where intangibles are capitalized	1 2 3 4 5		1 2 3 4 5
Q24	To develop a consistent vocabulary to describe and define intangible assets	1 2 3 4 5		1 2 3 4 5
Q25	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	1 2 3 4 5		1 2 3 4 5

In answering the questions use the following scales:		**Importance**		**Degree of Knowledge**	
		1	Unimportant	**1**	Very Low
		2	Of minor importance	**2**	Low
		3	Somewhat important	**3**	Medium
		4	Important	**4**	High
		5	Very Important	**5**	Very High

		Importance						Degree of Knowledge				
Q26	To determine the kind of non-financial information that is needed by investors and analysts	1	2	3	4	5		1	2	3	4	5
Q27	To develop a set of standards for valuation of intangibles	1	2	3	4	5		1	2	3	4	5
Q28	To examine whether a public and open market for intangibles can be developed	1	2	3	4	5		1	2	3	4	5
Q29	To evaluate the potential for using real options valuation techniques for intangibles	1	2	3	4	5		1	2	3	4	5
Q30	To determine if improved disclosure of intangibles can reduce the bid-ask spread analyst forecasts dispersion or lower the stock return volatility	1	2	3	4	5		1	2	3	4	5
Q31	To examine whether improved disclosure can lower under-pricing of initial public offerings	1	2	3	4	5		1	2	3	4	5
Q32	To examine how intellectual capital reports can help investors make comparisons between companies	1	2	3	4	5		1	2	3	4	5
Q33	To develop links between intangibles and value creation that will facilitate the capital market agents' use of such information, e.g. through a Business Model perspective	1	2	3	4	5		1	2	3	4	5
Q34	To conduct focused experimentation with reporting on intangibles in various industries and types of firms	1	2	3	4	5		1	2	3	4	5
Q35	To facilitate the capital markets agents' understanding of non-financial information e.g. information on intellectual capital, value drivers and so on	1	2	3	4	5		1	2	3	4	5

SECTION 4 - TAX EFFECTS

		Importance						Degree of Knowledge				
Q36	Research is needed on tax effects of intangibles in general	1	2	3	4	5		1	2	3	4	5
Q37	To analyze if changes in taxation principles regarding intangibles could improve capital allocation within firms and increase firms' innovative activities	1	2	3	4	5		1	2	3	4	5
Q38	To analyze if a more optimal capital allocation at a societal level can be obtained by tax incentives	1	2	3	4	5		1	2	3	4	5
Q39	To conduct detailed comparisons of different international taxation systems' treatment of intangibles regarding advantages and disadvantages and the implications of these systems in order to achieve harmonization	1	2	3	4	5		1	2	3	4	5

SECTION 5 - THE MOST PRESSING FUTURE RESEARCH TOPICS

Q40 **From the above questions (Q1-Q39), please choose the five questions, which in your opinion are most important for future research**

	Question number
Most important	
Second most important	
Third most important	
Fourth most important	
Fifth most important	

SECTION 6 - TRAINING NEEDS

Q41 **What kind of challenges do you foresee regarding the successful implementation of European-level standardised education programs owing to the enlargement of the European Union?** *(Please mark the appropriate box)*

- Faculty staffing on the programs
- Integration with existing, national institutions
- Stand-alone creation of these programs
- The funding of European-level standardised education programs
- Mobility and interchange of faculties to teach these programs
- Accreditation of these programs
- Adaptability of the content these programs to European diversity
- Other (*please indicate which*) _____

Q42 **How relevant do you find relational capital, which addresses learning taking place in networks and groups, as part of an education and training program?**

Totally irrelevant	Irrelevant	Neutral	Relevant	Extremely relevant

Q43 **How relevant do you find separate education programs designed according to the demographic makeup of the target group?**

Totally irrelevant	Irrelevant	Neutral	Relevant	Extremely relevant
☐	☐	☐	☐	☐

Q44 **How relevant do you find self-directed learning as part of an education program designed for the knowledge economy?**

Totally irrelevant	Irrelevant	Neutral	Relevant	Extremely relevant
☐	☐	☐	☐	☐

SECTION 7 - BACKGROUND QUESTIONS

Q45 **Which Country are you from?** _____

Q46 **Your organization is best characterized as a….** (***please mark the appropriate box***)

Business Enterprise	☐
Consultancy firm	☐
Policy Maker	☐
Professional Association	☐
Entrepreneurial Association	☐
Financial Analyst	☐
Research Centre	☐
Individual Researcher	☐

If you would like to receive a resume of the questionnaire results, please write your name and address in the below box or attach your visiting card:

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE