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Impacting Future Value: How to Manage your Intellectual Capital

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IMPACTING FUTURE VALUE: HOW TO MANAGE YOUR INTELLECTUAL CAPITAL

INTRODUCTION

Intellectual capital helps to drive success and create value. Although physical and financial assets remain important, intellectual capital elements such as the right skills and knowledge, a respected brand and a good corporate reputation, strong relationships with key suppliers, the possession of customer and market data, or a culture of innovation set enterprises apart.

Growth, above-average earnings, and sustainable competitive advantages are no longer driven by investing in physical assets such as factories, offices, or machinery, but instead by investing in and managing intellectual capital. The success of leading companies such as Amazon, Google, Microsoft, and Wal-Mart is based on their intellectual capital. Physical assets such as distribution warehouses, office buildings, and stores are important, but not as much as (for example) knowledge about customers, technology, and markets. For example, organizations such as Wal-Mart, with its huge store infrastructure, couldn't perform as well as it does without (a) the intelligence to build its stores at the right locations, (b) the knowledge about consumers to stock the right goods, and (c) its expertise in inventory replenishment. Intellectual capital allows organizations to

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EXECUTIVE SUMMARY

Success and future value creation in today's economy depend on the ownership and appropriate management of intellectual capital. Superior performance is no longer driven by traditional physical assets, but instead primarily by intellectual capital. That term includes knowledge, skills, brands, corporate reputation, relationships, information and data, as well as processes, patents, trust, or an innovative organizational culture. The importance of intellectual capital as an enabler of future performance is now generally accepted among executives across the world. Most organizations, however, still lack practical skills, tools, and techniques to identify, measure, and manage this vital performance driver. This management accounting guideline (MAG) addresses this lack by introducing five key steps for successfully managing intellectual capital, namely: (1) how to identify intellectual capital in your organization, (2) how to map its impact, (3) how to measure it, (4) how to manage it, and (5) how to report it. Practical and easy-to-apply tools and techniques are provided for each of these steps, to equip managers and accountants with the necessary skills to successfully manage the intellectual capital of their organizations.

leverage their tangible resources. Without appropriate intellectual capital, physical assets are just commodities that can yield, at best, average returns.[1] Identifying and managing the right intellectual capital is and will increasingly be the key differentiator between successful, mediocre, and failing enterprises.

It is therefore not surprising that intellectual capital has moved from the periphery to the core of modern businesses. Organizations that want to remain competitive in today's world need tools and techniques to manage their intellectual capital. In fact, executives around the world have confirmed this in a recent survey by Accenture and the Economist Intelligence Unit, which found that most executives believe that intellectual capital is absolutely critical for the future success of their businesses.[2] The same survey also finds that most executives agree that their current approaches to measuring and managing intellectual capital are either poor or non-existent. Other recent surveys, including one that surveyed 780 Chief Executive Officers and Chief Financial Officers of the 5,000 largest companies in the United States, and another involving 15 of the world's leading banks and financial services firms, found that measuring and managing intangibles is the least developed in current performance measurement and management systems.[3] A report from the Brookings Institution, an independent research and policy institute, outlined that the large and growing discrepancy between (a) the importance of intangible assets to economic growth, and (b) our inability to clearly identify, measure, and account for those assets is a serious problem for business managers, investors, and governments.[4] Also, Intellectual capital is not only critical for commercial enterprises, but increasingly it matters as well in government and not-for-profit organizations. Studies in government organizations have found that intangibles such as corporate reputation, human capital, and relationships with key stakeholders are of vital importance.[5]

The internal problem of identifying, measuring, and managing intellectual capital also applies to external reporting, where there are growing frustrations with the inability of traditional financial reporting to account for and report on intangibles. The increasing gap between (a) what organizations report in their annual reports (mainly traditional physical and financial assets), and (b) what actually matters the most (the intangibles) is reflected in the ever increasing variance between book value (mainly traditional assets or liabilities recorded in the balance sheet) and market value (the value of a public company as measured by the share price times the number of shares issued).

To positively impact future value, organizations require a better understanding of intellectual capital and the latest tools available to identify, measure, and manage this important value driver. This MAG provides such understanding and outlines the latest tools that will equip managers and accountants with the necessary skills to better manage intangibles to improve organizational performance and drive future value. In addition, this MAG looks at the latest tools for external reporting of intellectual capital, to improve the external communication of the company's value to its shareholders and stakeholders.

ABOUT THIS MAG

This guideline is aimed at finance professionals and accountants in business who would like to better understand how to manage intellectual capital. In particular, it is for those who are responsible for implementing or improving the management, measurement, and reporting of intellectual capital in their organizations. It will also be useful to anyone looking for a general introduction and an overview of the key ideas and challenges of measuring, managing, and reporting intangibles. This guideline follows on from the CIMA report '*Understanding Corporate Value: Managing and Reporting Intellectual Capital*,' published in 2003[6]. This earlier technical report provided an overview of tools and approaches for managing and reporting intellectual capital. However, the world has moved on since 2003, and new tools and standards have emerged. Also, this MAG provides clearer guidance and practical tools to enable the reader to better measure, manage, and report intellectual capital.

This MAG outlines five key steps for successfully managing intellectual capital. Each step contains a number of practical and easy-to-follow tools and techniques. Although all of these tools and techniques are rigorously grounded in the latest research, they have been selected because of their practical relevance and easy application. The first step looks at how to identify intellectual capital within an organization. Step two provides tools for assessing the strategic value of intellectual capital by visually mapping how it helps organizations to accomplish their strategic objectives. Step three discusses how to measure intellectual capital and provides tools and techniques to do so. Step four outlines how to use the resultant information to better manage intellectual capital in organizations.

It explores how to improve decision making, how to review the strategy, and how to assess the risks associated with intellectual capital. The final step discusses the reporting and disclosure of intellectual capital, and provides guidance on how to prepare such reports. Before discussing each of the five intellectual capital management steps, we provide a detailed definition of what intellectual capital is – to dispel a lot of confusion about the meaning of this term.

WHAT IS INTELLECTUAL CAPITAL?[7]

Before we can identify, measure, manage, and report on intellectual capital, we need to understand what we mean by that term. The concept of intellectual capital is often discussed, but not always well defined.[8] And a multitude of different words have been used to describe the same or a similar concept. People tend to use terms such as *assets, resources*, or *performance drivers*; and they often replace *intellectual* with words such as *intangible, knowledge-based*, or *non-financial*. Any of these words (or a combination of them) can be found in the management literature. Also, some disciplines (such as the financial accounting and legal disciplines) have created quite narrow definitions, such as 'non-financial fixed assets that do not have physical substance but are identifiable and controlled by the entity through custody and legal rights,' the definition found in accounting standards. Although narrow definitions like this are necessary to ensure consistency in balance sheets and other external reports, they are less useful in creating a broader understanding of intellectual capital. This is so because they exclude many commonly accepted intangibles, such as customer relationships or knowledge and skills of employees, as they cannot be controlled by the firm in an 'accounting' sense. All of this has led to some considerable confusion about what intellectual capital is and is not.

In this guideline, we will use the terms 'intellectual capital' and 'intangibles' interchangeably. It is important to stress that there is no generally right or wrong way to classify intellectual capital. For the purpose of this guideline, it is important to provide as broad a classification as possible, to ensure that the reader gets a complete picture of what intellectual capital encompasses. The key objective of this broad classification (defined below) is to increase the general understanding of what intellectual capital is, and therefore to facilitate the identification of intellectual capital within organizations. The classification should be used as a template to ensure that all possible intangibles are identified. Debates about a potential overlap, or whether one intangible should be put into one category or another, are therefore, at this point, not productive or particularly useful. What is important is that we identify all intangibles that matter to our organizations.

Defining Intellectual Capital

Together with physical and financial capital, intellectual capital is one of the three vital resources of organizations. Intellectual capital includes all non-tangible resources that (a) are attributed to an organization, and (b) contribute to the delivery of the organization's value proposition. Intangible resources can be split into three components: human capital, structural capital, and relational capital (see Figure 1). Each of these is discussed further below.

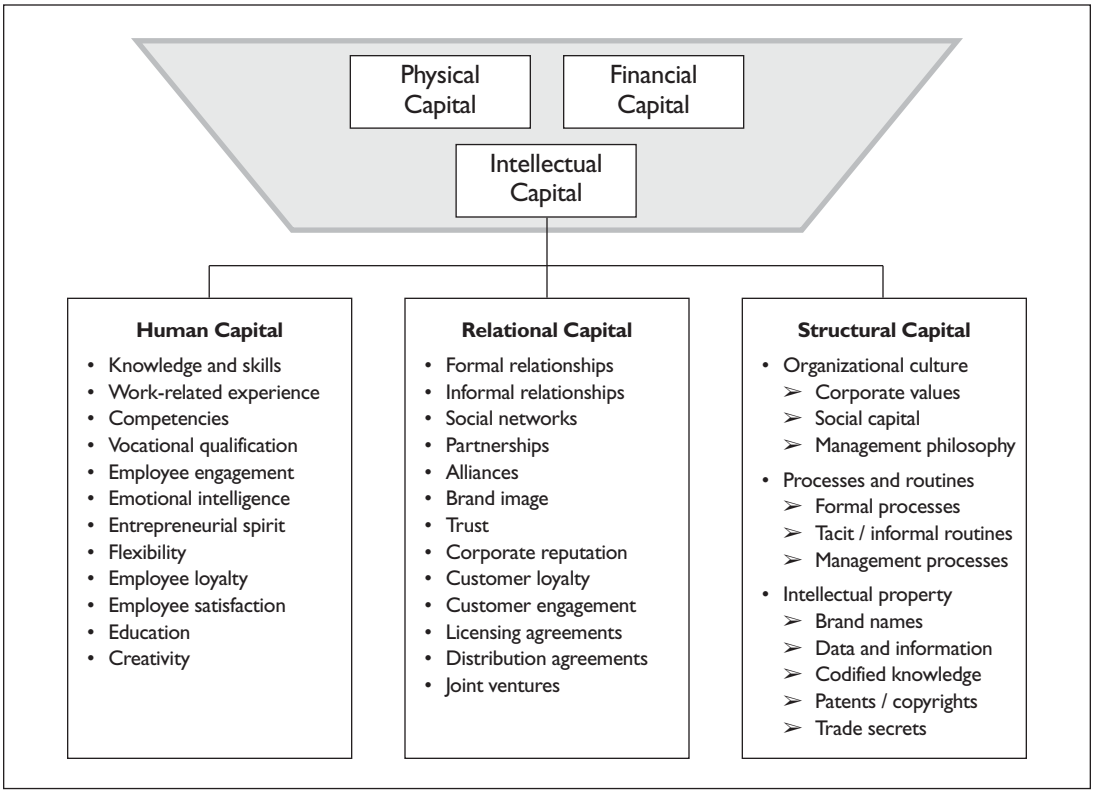
Human Capital

The principal sub-components of an organization's human capital are its workforce's skill sets, depth of expertise, and breadth of experience. Human resources can be thought of as the living and thinking part of intellectual capital resources.[9] These can therefore walk out at night when people leave; relational and structural capital on the other hand remains with the organization even after people have left. Human capital includes the (a) skills and competencies of employees, (b) their know-how in certain fields that are important to the success of the enterprise, and (c) their aptitudes and attitudes. Employee loyalty, motivation, and flexibility will often be significant factors too, because a firm's 'expertise and experience pool' is developed over time. A high level of staff turnover may mean that a firm is losing these important elements of intellectual capital.

Relational Capital

Relational capital includes all the relationships that exist between an organization and any outside person or organization. These can include customers, intermediaries, employees, suppliers, alliance partners, regulators, pressure groups, communities, creditors, and investors. Relationships tend to fall into two categories – those that are formalized through, for example, contractual obligations with major customers, suppliers and partners, and those that are more informal.

Figure 1: Classification of Intellectual Capital



Although the former tended to be predominant in the past, today, the latter have a more important impact on how the enterprise is managed. In today's integrated economy, with just-in-time supply chains, relationships with trading partners and suppliers can be crucial. Brand image, corporate reputation, and product/service reputation, which reflect the relationships between organizations and their (current and potential) customers, also fall into this category.

Structural Capital

Structural capital covers a broad range of vital elements. Foremost among these are usually (a) the organization's essential operating processes, (b) how it is structured, (c) its policies, information flows, and content of its databases, (d) its leadership and management style, and (e) its culture, and (f) its incentive schemes. They can, however, also include legally protected intangible resources. Structural capital can be sub-categorized into *Culture, Practices and Routines*, and *Intellectual Property*.

Organizational culture is fundamental to achieving organizational goals. Organizational culture provides a common way of seeing things, sets the decision-making pattern, and establishes the value system.[10] Cultural resources include corporate culture, organizational values, and management philosophies. They provide employees with a shared framework to interpret events, a framework that encourages individuals to operate both autonomously and as a team to achieve the company's objectives.[11]

Processes and Routines, which reflect shared organizational knowledge, can be important organizational resources. Practices and routines include internal practices and processes; these can be formal or informal (tacit) procedures and rules. Formalized routines can be reflected in process manuals that provide codified procedures and rules; informal routines include understood (but unstated) codes of behavior and workflows. One example of a process that has become a valuable strategic resource is Southwest Airlines' airplane turnaround, which they have optimized to only last 25 minutes. This process, introduced as a necessary part of Southwest's start-up as a low-cost carrier, has today become a key differentiator.[12]

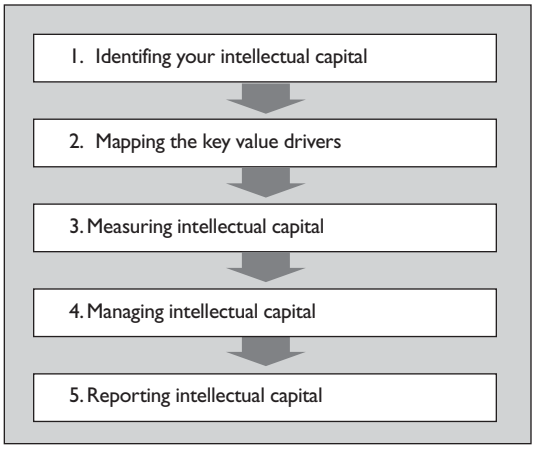
Intellectual property – owned or legally protected intangible resources – is becoming increasingly important. Patents, copyrights, trademarks, brands, registered designs, trade secrets, database content, and processes whose ownership is granted to the company by law have become a key element of

competition.[13] Intellectual property is owned by the organization and not its employees. It represents the tools and enablers that help to define and differentiate an organization's unique offering to the markets in which it operates. Examples of intellectual property include trademark symbols such as the McDonald's Arches and the Nike Swoosh, or the patented '1-click' buying option at Amazon.com. Coca-Cola, for example, made a conscious decision to keep the formula for Coke a trade secret that it actively protects. Had they patented the formula instead, their patent protection would have run out many years ago, most likely destroying its market share.

FIVE STEPS TO SUCCESSFUL INTELLECTUAL CAPITAL MANAGEMENT

In this MAG, we will outline five key steps for successfully managing intellectual capital (see Figure 2). The first step is to identify an organization's intellectual capital. Once this is known, we need to assess its value. It is important to understand that not all intellectual capital is automatically valuable to an organization. It is only valuable if it helps to deliver the organizational objectives. In step two, we therefore assess the relevance of intellectual capital by mapping the strategy (with its intellectual value drivers) onto a strategic map. The third step is to extract meaningful management information from measuring the performance of intellectual capital. In step four, this management information can then be used to analyze performance and to develop management insights that inform organizational decision making and learning. Finally, in step five, external reports can be produced to communicate the value of intellectual capital to internal and external stakeholders.

Figure 2: Five-Step Intellectual Capital Management Model



Each of these five steps will be discussed in detail below. We will explain what each step involves, and provide a number of tools and techniques designed to help the practicing manager to better manage the organization's intellectual capital.

1. Identifying your Intellectual Capital

The first step, an inventory check, requires identifying an organization's intellectual capital. The categorization of intellectual capital outlined above can be used to facilitate a discussion about the current stock of intangibles. It can be used to create a template that informs people about the different categories of intellectual capital, and prompts them to think about their organizations' different types of intangibles (see Figure 3).

Intellectual capital can be identified through conducting interviews, facilitated workshops, or via mail or online surveys. From experience, face-to-face individual interviews or surveys work best, as they allow everyone to have a say, free of the suppressing influence of stronger or more dominant participants in workshops.

It is important to emphasize again that the objective of this classification template is to facilitate a discussion about as many different resources (intellectual, physical, and financial capital) as possible, to create the most realistic picture of the existing resource architecture.

Individual responses from surveys or interviews can then be analyzed and compiled into a list of all the major resources. At this point, it is no longer as important to use the categories introduced in Figure 1, as it is to present the individual resources in a language that is understood within the particular organization. Different organizations tend to use organization-specific terminology to describe the same resources. It is always advisable to use the organization's commonly used language instead of the categories or examples provided in the template below. Using terminology such as 'human capital', for example, can cause misunderstanding or even cynicism, especially if this terminology is not commonly used within the organization.

Intellectual Capital Underpins Competencies

Even though most organizations possess a wide variety of intellectual capital, some will contribute more to delivery of their value proposition than others. This is because (a) the value of intellectual capital depends on an organization's specific strategy, and (b) intellectual capital dynamically interacts with and depends on other resources:

Figure 3: Identifying Your Resource Stock (Source Marr, 2008)

Resource Category	Examples of Sub-categories:	Intellectual Capital elements with a significant presence in our organization:
Human Capital	Knowlege, education, technical knowledge and expertise, skills, know-how, attitudes, experience, motivation, flexibility, commitment, creativity, etc.	
Relational Capital	Customer relationships, supplier relationships, reputation, image, trust, contractual relationships, informal relationships, alliances, relationships with regulators, partners, etc.	
Structural Capital	Processes, tacit routines, organizational structure, governance and management approaches, organizational culture, social capital, shared identity, patents, brand names, copyrights, trade secrets, codified information and knowledge, e.g., in databases or process manuals, etc.	
Physical Capital	Property, plants, location of buildings, information and communication infrastructure, machines, equipment, natural resources, physical infrastructure, office design, etc.	
Financial Capital	Cash, investments, bonds, loans, budget, etc.	

- The value of intellectual capital ***depends on an organization's specific strategy***. For example, the know-how of building engines is essential for Honda, but of little value to a financial services firm; likewise, the competencies associated with creating light and durable composite materials so essential for successful Formula One motor racing teams is undoubtedly probably of little value to a telecommunications firm.
- Intellectual Capital elements are not static – they ***dynamically interact*** with each other, and often depend on other resources for their value. For example, Amazon.com's brand awareness and reputation, although critically important, would rapidly fade without its efficient distribution network, well-designed internal processes, and strong supplier relationships. It is therefore impossible to value a brand name without taking into account all other important factors, such as reputation, people, processes, etc. Cases such as the accounting firm, Arthur Andersen, have shown how a brand name can disappear overnight if the supporting intangibles such as trust or reputation fall away. Often referred to as the interconnectedness of resource stocks, such relationships are extremely important to intangibles.

This means, therefore, that individual intellectual capital resources interrelate with other intangible and tangible resources to form core competencies. In turn, these allow an organization to perform its core activities to deliver its value proposition and strategic deliverables (see Figure 4). A core activity is an excellently performed internal activity that is central, not peripheral, to a company's strategy, competitiveness, and value proposition. An organization should only have very few (usually between 2 and 5) core activities.

Figure 4: Intellectual Capital Underpins Capabilities and Core Competencies

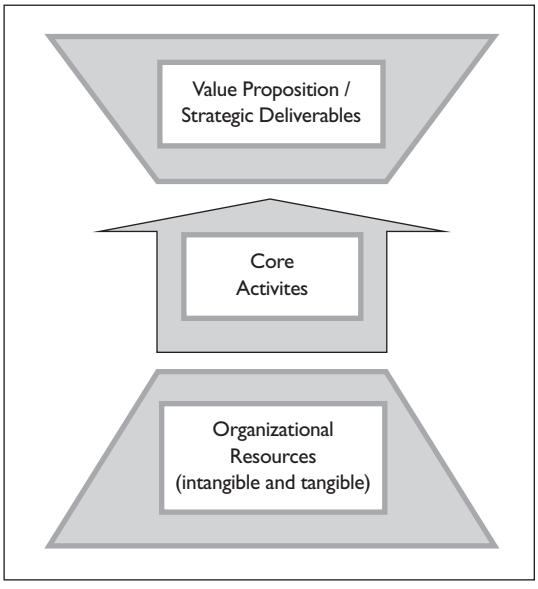


Figure 5: Assessing the Importance of Intellectual Capital

Identified Key Resources Examples	**Relative strengths of these resources in our organization** 0 = not at all important 10 = vitally important	**Relative importance of these resources to delivering our value proposition** 0 = not at all important 10 = vitally important
Our specific subject knowledge	7	10
Our perceived reputation	4	9
Relationships with key partners	4	6
Our patent for X	9	2
Our brand X	8	7
Etc.		

To understand the role and strategic importance of intellectual capital in any organization therefore requires a clear understanding of the firm's strategic direction and objectives.

Assessing the Strategic Value of Intellectual Capital

The relative importance or strategic value of intellectual capital can only be assessed in the context of the existing organization. The questions to ask are: How important are our different intellectual capital resources to achieving our overall value proposition? Or, how strong are our existing resources and how can we utilize them more effectively? Independently assessing (a) the importance of the different resources to delivery of your value proposition, and (b) your resource strengths allows organizations to perform a gap analysis. This lets you understand whether you are building the appropriate intellectual capital for your value proposition, or whether you are under- or over-investing in certain areas.

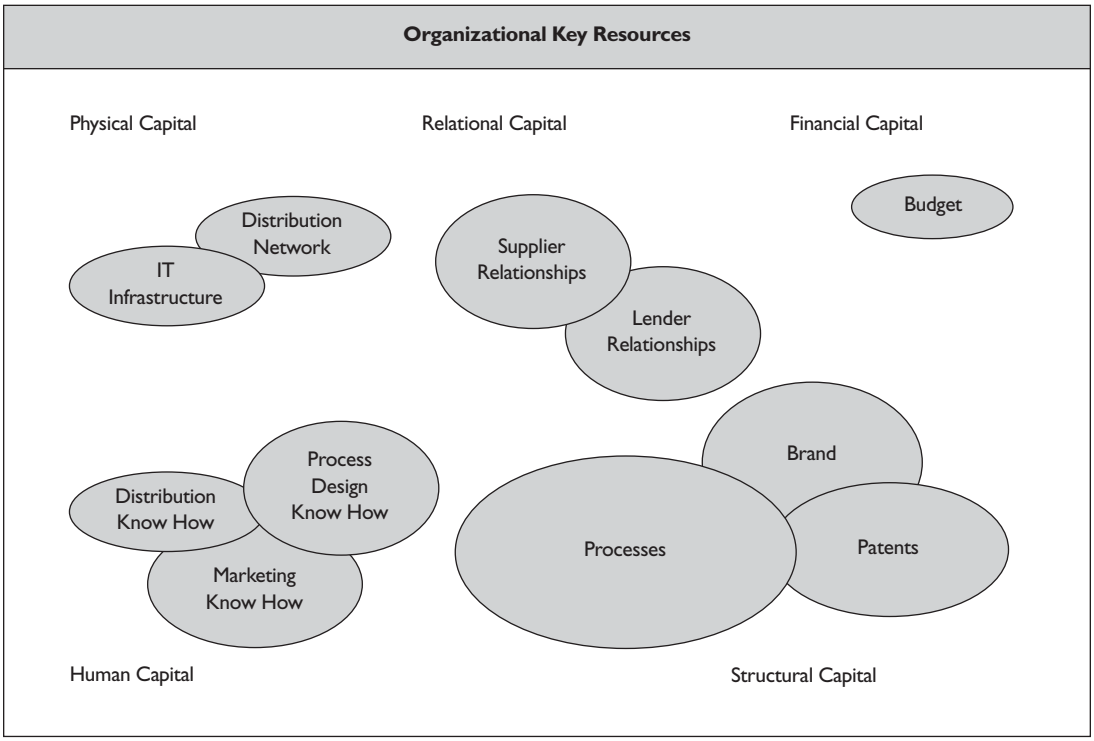
This assessment is best done individually, either in interviews or by survey. Or it can be done in a workshop setting. The easiest way to perform the assessment is to use the list of key resources identified above, and then to add columns to assess the relative strengths and the importance of these resources to delivering the current strategy (see Figure 5). Conducting both assessments allows organizations to highlight any gaps.

The results from the individual assessments can then be aggregated and displayed in a resource map. Such a map visually represents the relative strength or importance of the different resources (intangible and tangible). It is also possible to include the two data sets (strengths and importance), and to use different size bubbles to indicate any gaps.

Figure 6 illustrates such a resource map, one created for a leading online retailing business[14] to understand the relative importance of its resources to deliver the existing value proposition. The value proposition of this well-known retailer was to become the world's preferred source for a particular type of goods by providing consumers not only with top level service, but also high quality value-added information, excellent price, simple transactions, and an enjoyable shopping experience. In this example, managers assessed structural capital and human capital as the most important intellectual capital value drivers (indicated by the biggest bubbles). This commercial enterprise places particular emphasis on its knowledge of the market and its customers, plus its processes and brand. Other important resources were its relationships, especially with its suppliers and lenders, as the business is still in the growing phase and unprofitable. This map helped the organization to understand the relative importance of its intellectual capital in order to allocate its resources appropriately.

As discussed in Figure 6, intellectual capital interacts with other resources to create a core competency, which in turn helps to deliver the value proposition. This means that resource interdependencies can only be assessed in relation to the organization's existing core competencies and value proposition. If you have defined your strategic deliverables and core activities, you can then use the above resource list to understand how the resources combine to deliver your core competencies and value proposition.[15]

Figure 6: Visualizing the Relative Importance of Key Resources (Source Marr, 2006)



Studies have found that organizational resources (especially intangibles) are interdependent and enhance each other in affecting organizational performance. For example, a strong brand name might improve performance, but a strong brand name combined with the right market knowledge and customer service processes can improve performance even more. As a consequence, organizations should attempt not only to (a) understand the direct effect of each organizational resource on performance, but also to (b) assess the interdependencies and their effects on performance.[16] For this purpose, you can use a matrix to rate how resource A depends on resource B to deliver the core competency, until the all resource combinations are rated. The scale used for assessing the relationships could be between 0 and 5, with 0 indicating no relationship and 5 indicating a very strong interdependency. Again, these matrices can be completed by individuals and then aggregated.

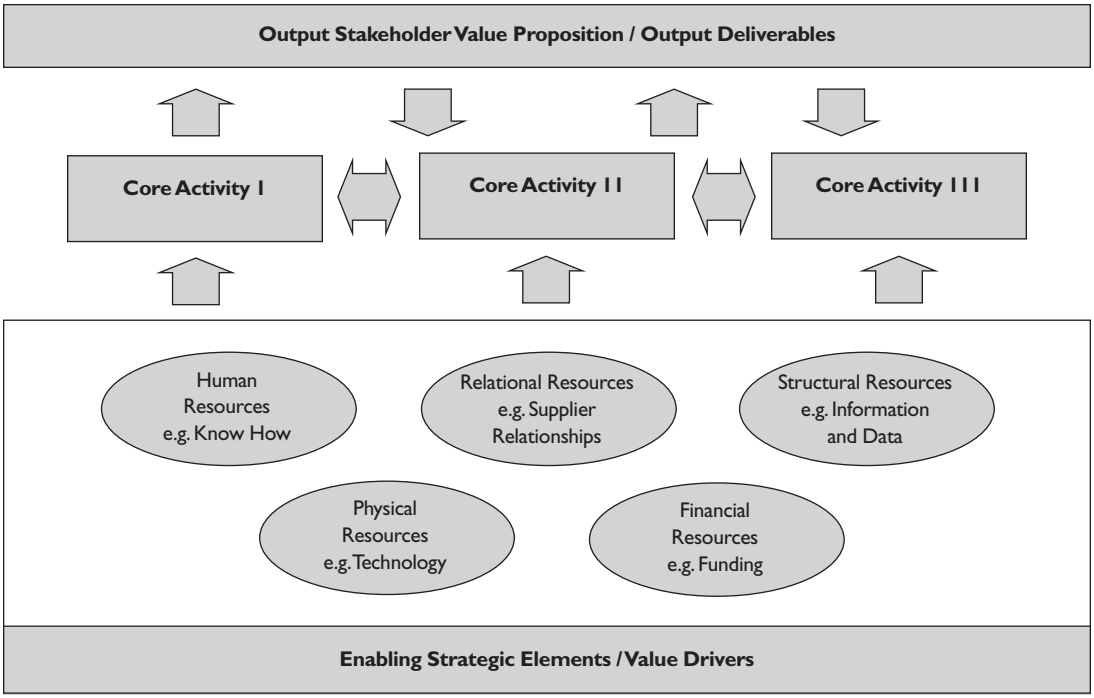
Applying these tools will allow organizations to gain a solid understanding of their intellectual capital infrastructure. In the next section we will discuss how to map this into an integrated picture of strategy.

2. Mapping the Intellectual Capital Value Drivers

A value creation map is a visual representation of the organizational strategy. Mapping your key value drivers into a visual map has two primary functions. The first is to ensure that the strategy with all its intellectual capital value drivers is integrated and coherent; the second is to enable easy communication of the strategy and the role and importance of intellectual capital in delivering the strategy. A value creation map brings together the three key elements of an organizational strategy, namely, its value proposition, its core activities, and its enabling strategic elements or performance drivers:

- The *value proposition* (or output deliverables) identifies an organization's purpose and its roles and deliverables. It also identifies the key output stakeholders of the organization and the value delivered to them. It is mainly derived from the analysis of the core purpose and the stakeholder requirements. Clarifying the value proposition allows organizations to put its intellectual capital into a strategic context.

Figure 7: Value Creation Map Template (Source Marr, 2008)



- The *core activities* are the vital few things an organization has to excel at to deliver its value proposition. They essentially define (a) what an organization should focus on, and (b) what differentiates it from others. Core activities are directly linked to the organizational core competencies.
- The *enabling strategic elements (*or *value drivers)* are the other strategic elements or objectives an organization requires to perform its core activities and to deliver its value proposition. These enabling elements or value drivers derive from the assessment of the organization's resource architecture and intellectual capital.

These three components are then placed in relationship and displayed on one piece of paper to create a completely integrated and coherent picture of the strategy. A value creation map therefore visually represents an organization's unique strategy at a specific point in time. It therefore has a limited life-span.[17] As a consequence, the maps need to be regularly revised (usually annually), and no two value creation maps should be the same. The basic template of a value creation map is shown in Figure 7.

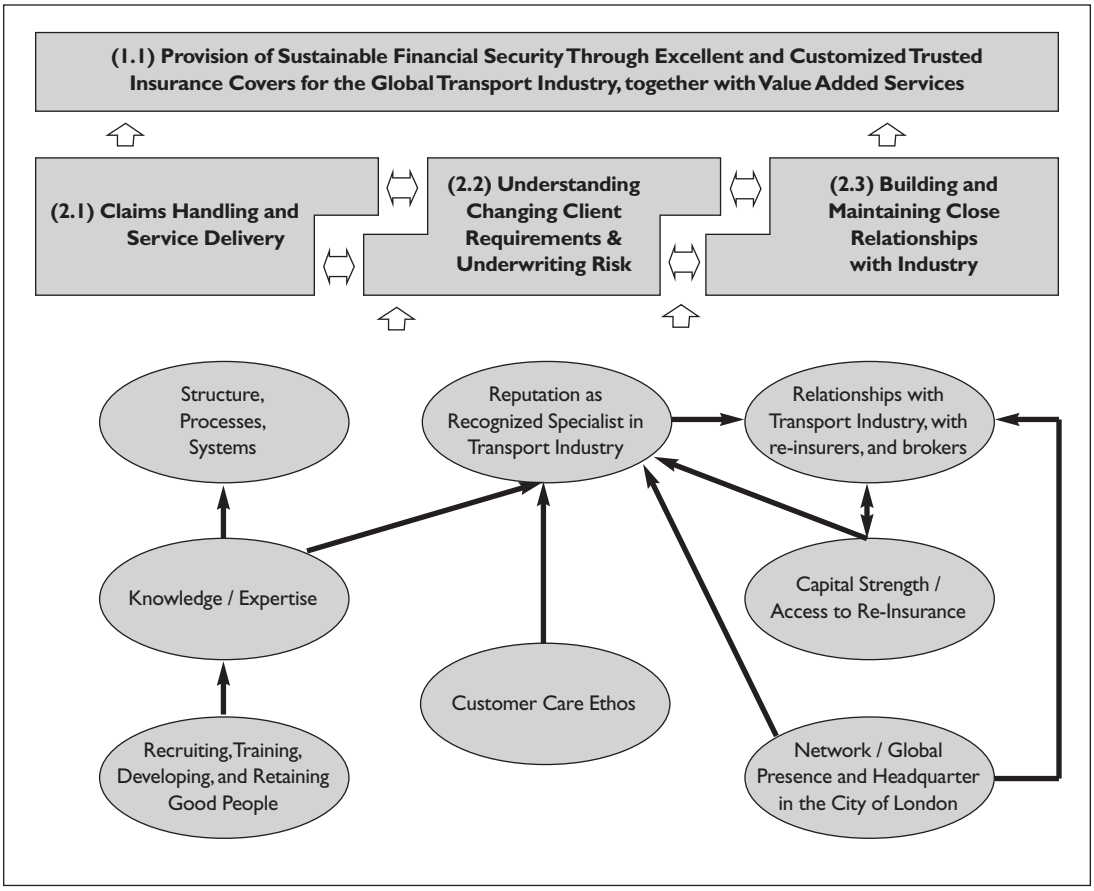
A value creation map (a) reflects a shared understanding of strategy and the importance of intellectual capital in the context of this strategy, and (b) facilitates its communication. Based on such shared understanding, an organization can then assess and manage its intellectual capital.

How maps are portrayed can vary depending on preferences, levels of understanding, and available data. The most basic display does not show any cause-and-effect relationships or individual inter-dependencies between the enabling elements. Placing all these elements in one box indicates the interdependence of these different enablers or value drivers and the fact that, as a bundle of enabling elements, they support the core activities.

Value creation maps showing cause-and-effect relationships (see the example in Figure 8)[18] provide the most insight. Such maps indicate the most important cause-and-effect relationships between the different enablers. For example, better training builds up relevant knowledge, which in turn improves customer service processes. This type of value creation map is truly operational, thus promoting a deep and comprehensive understanding of the role and importance of intellectual capital.

Because a value creation map without cause-and-effect links is easier to create (because the detailed interdependencies do not have to be determined), there is a danger that intellectual capital elements may be added that don't have a real impact on performance. A value creation

Figure 8: Value Creation Map TT Club (Source Marr, 2006)



map with cause-and-effect links displays the most important interdependencies between the different enablers, thus ensuring that each element is clearly linked to the core activities and value proposition. This makes value creation maps easier to interpret and analyze, and makes possible the test and verification of assumed causal relationships and interdependencies.

We therefore recommend that organizations create value creation maps (preferably with cause-and-effect links) that map the key relationships between the intellectual capital and the strategic outputs of an organization. Such maps can be created (preferably by a small task force) from the data collected in the first step of identifying the intellectual capital. A workshop with a wider audience (usually the senior management team) can then be conducted to discuss and finalize the map.

Case study: Thomas Miller

The Thomas Miller Group is a global insurance group that includes mutual insurance companies (known as Clubs). The TT Club, one of the Group's key companies, is a leading provider of insurance and related risk management services for the international transport and logistics industry. The TT Club has its global headquarters in the City of London, the central hub for insurance firms, but has 20 office locations around the world. Its customers range from the world's largest shipping lines, busiest ports, global freight forwarders, and cargo handling terminals, to smaller companies operating in niche markets. Since its inception over 20 years ago, the TT Club has steadily grown its premium income at an average rate of 10% per annum. Customer loyalty has been an essential factor in this growth. Indeed, 90% of its customers renew their policies with the TT Club each year.

Developing a value creation map (with cause-and-effect links) was part of the TT Club's strategic planning cycle. It wanted to better understand its strategic value drivers, with an emphasis on the non-financial and intangible performance drivers. Developing the value creation map involved a set of interviews with members of the senior management team, the CEO, and board members. The map was finalized in a facilitated one-day planning

workshop with the senior management team. The value creation map for the TT Club is shown in Figure 8.

The TT Club decided that its value proposition was to provide sustainable financial security for the global transport industry, by offering excellent customized insurance covers and value-added services that customers trust. They identified three core activities: (1) claims handling and delivery of services, such as risk assessments and advice; (2) understanding the industry and changing client demands and underwriting requirements; (3) building and maintaining close relationships with the industry, which gives the TT Club the status of an independent body within the industry.

These competencies are delivered through the current structures, processes, and systems supported by the reputation and recognition of the TT Club as a specialist member of the transport industry. These competencies are also delivered through relationships not only within the transport industry, but also with re-insurers and brokers. At the foundation of the value creation map is the ability to recruit, train, develop, and retain good people who help to create the needed knowledge and expertise. This knowledge and expertise together with the strong customer care ethos, helps to shape the TT Club's reputation in the industry. Knowledge and expertise also shapes the development of its processes, structures, and systems.

Another key enabler is capital strength and access to re-insurance, one of the strongest resources of the TT Club. Access to re-insurance depends on a strong and dynamic relationship with re-insurers. Capital strength is also an important driver of reputation; without capital strength, TT Club's reputation would suffer very quickly. The TT Club's global presence helps it to create local relationships, which in turn help its reputation and recognition in the field. Having its headquarters in London enables the TT Club to develop the crucial relationships with (a) brokers who sell their products, and (b) re-insurers to make re-insurance deals.

Case study: The Royal Air Force[19]

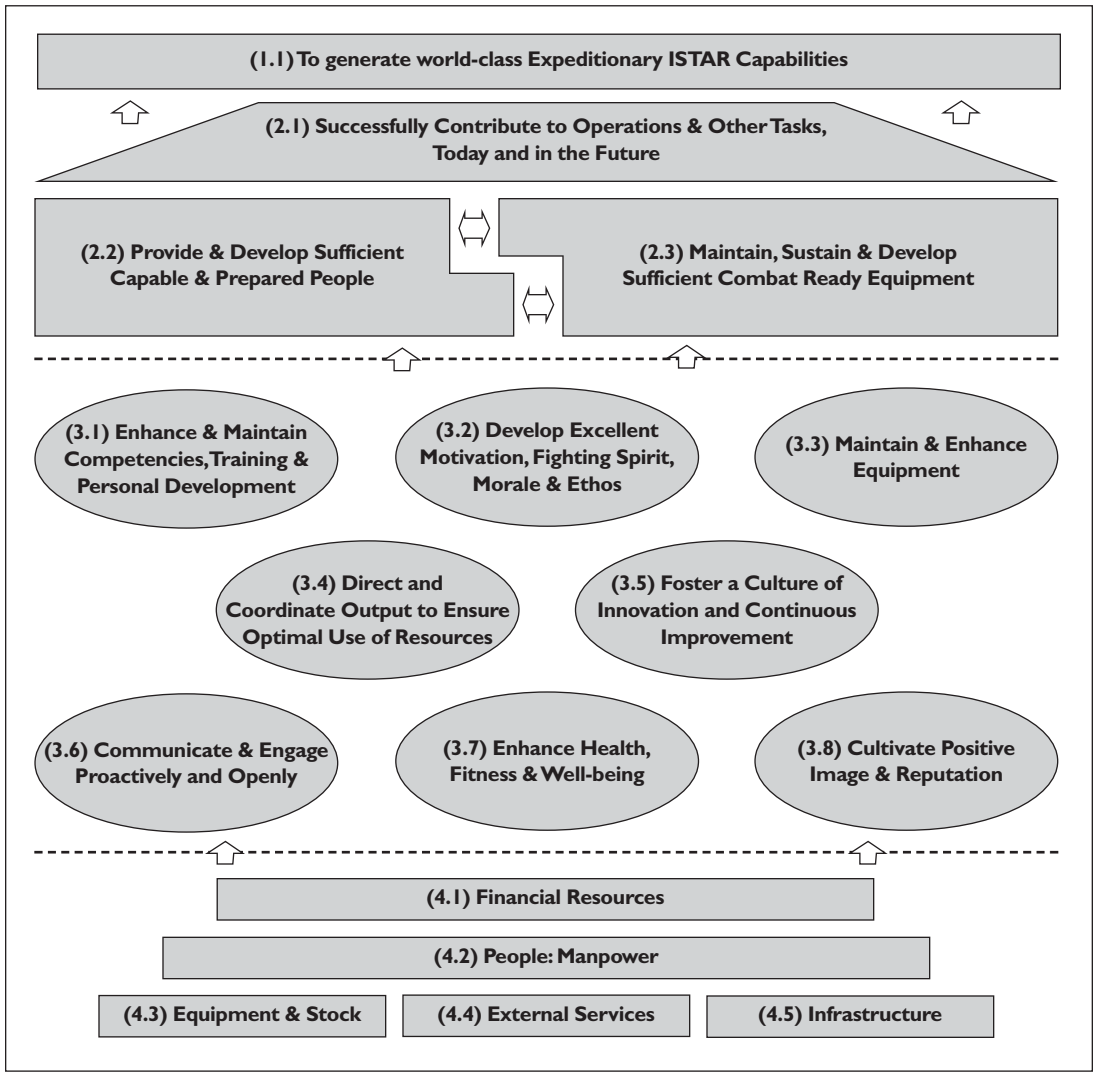
We discuss below how the Royal Air Force of the United Kingdom (RAF) has applied the value creation mapping tool to identify and map its intellectual capital value drivers. The RAF has 50,000 service and civilian personnel, and more than 500 aircraft. It supports operations in the Gulf region, Kosovo, and Afghanistan, and also maintains an RAF presence in Cyprus, Gibraltar, Ascension Island, and the Falkland Islands. Its key peacetime responsibility is to maintain the required readiness of its forces to support the requirement to operate as an expeditionary air force.

The RAF has applied the value creation map to cascade the overall strategy into the forces and RAF stations across the UK. Based on interviews, a value creation map was created for different stations. The essential resources on which the station relied (e.g., people, equipment, runways, and buildings) were evident. There were also several obvious core activities that needed little thought. These included flight training, servicing of aircraft, and administrative support. However, the importance of maintaining fighting spirit and cohesion across the unit called for competency in a number of intangible, but nonetheless essential, value drivers. The emerging picture was translated into a value creation map that charted how the enabling strategic elements flowed to the core activities, then to the delivered output, all to achieve the overall mission.

The goal was always to represent the essence of a station on a single A4 page. In the RAF context, the resultant diagram was termed the Strategic Map. The draft strategic maps were then subjected to rigorous review during a presentation given to station commanders and their executives. Although there were differing views on the key interdependencies and the relative importance of core activities, agreement was achieved on the map's essential components. After the Strategic Map had been agreed upon in principle, an associated table was generated that explained the intended scope of each element.

Figure 9 outlines the value creation map for one of the RAF stations, showing its value proposition, core activities, and intellectual capital value drivers. This version does not include the cause-and-effect links between the different intellectual capital elements. Overall, this station (RAF Waddington) exists to generate world-class Expeditionary Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR) Capabilities. There were three core activities at which the station had to excel, namely, (a) to successfully contribute to operations and other tasks (today and in the future), (b) to provide and develop a sufficient number of capable and prepared people, and (c) to maintain, sustain, and develop sufficient combat-ready equipment. The station agreed on eight intellectual capital enablers of performance

Figure 9: Value Creation Map RAF (Source Marr & Shore, 2008)



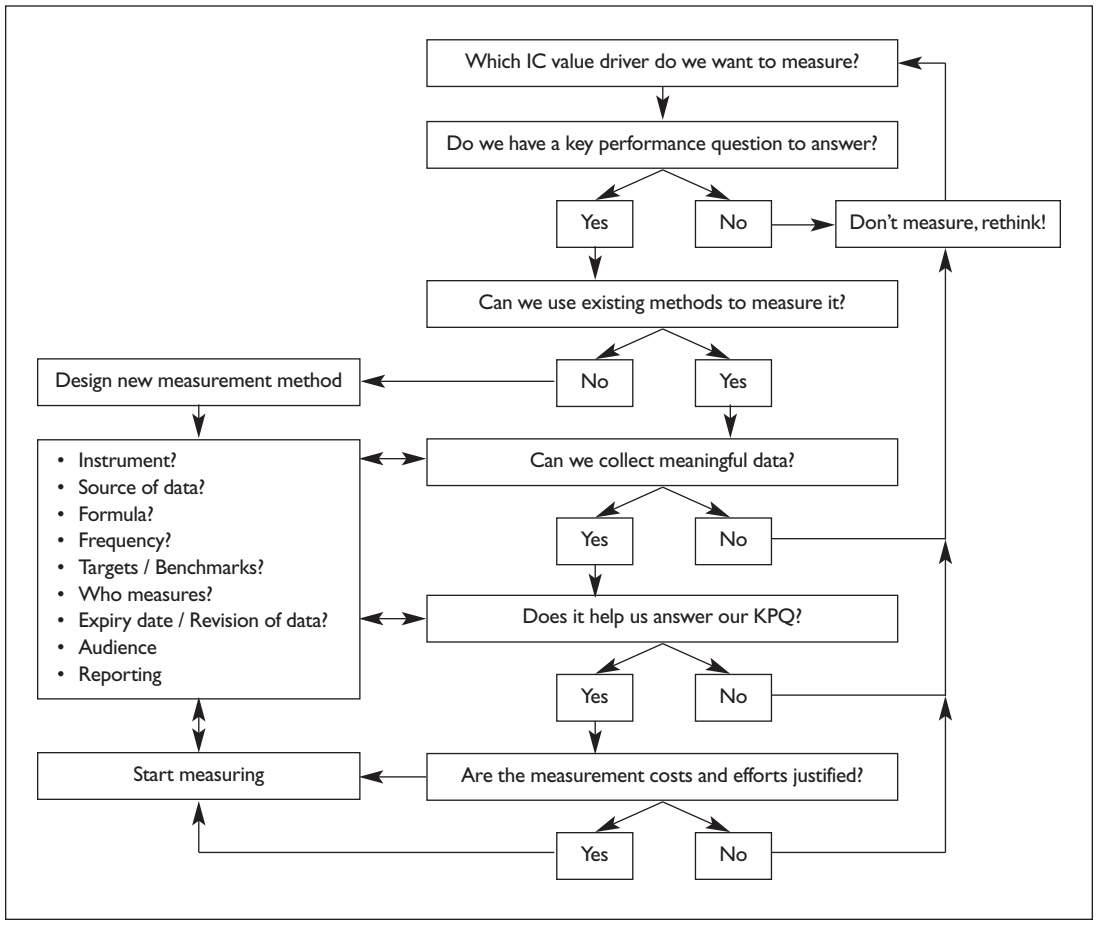
that it required to continue to deliver its objectives. These performance drivers are to: enhance and maintain competencies, training, and personal development; develop excellent motivation, fighting spirit, morale, and ethos; maintain and improve equipment; direct and coordinate output to ensure optimal use of resources; foster a culture of innovation and continuous improvement; communicate and engage proactively and openly; enhance health, fitness, and well-being; and cultivate a positive image and reputation.

In addition to these intellectual capital enablers, the stations identified a number of other resources it needed, including finance, infrastructure, equipment and stock, external services, and manpower. All of these are allocated to the stations. Together, all the elements form a cohesive picture of the strategy for RAF stations.

3. Measuring Intellectual Capital

After identifying and mapping the intellectual capital value drivers, organizations can start measuring them. We often have a misconception that intellectual capital is difficult or impossible to measure. This is not the case. Many tools and techniques are available to measure intellectual capital, and it is most probably easier to measure than you think. This section outlines a model that will assist you in developing performance indicators for your intellectual capital value drivers. Figure 10 shows the intellectual capital performance indicator design model. It starts with identifying which intellectual capital element you want to measure. Every intellectual capital value driver on the value creation map should be measured, and for each of them the indicator design model should be followed.

Figure 10: IC Performance Indicator Design Model (Source Marr, 2008)



After you have decided on the intellectual capital value driver to measure, it is important to decide whether it is worth measuring in the first place. Measuring performance should provide us with meaningful information that helps to reduce uncertainty about intellectual capital, and enable us to learn about the intellectual capital value driver and its performance. Measuring performance should help us to make better informed decisions that enable us to improve our performance. An excellent way of determining whether an indicator is worth measuring is to establish the question(s) the indicator will help to answer. So-called Key Performance Questions (KPQs)[20] are designed to identify what managers want to know about the various intellectual capital value drivers. KPQs make sure that any measure has a clear purpose. If there is no question that needs to be answered, then there is no need for measurement.

Having identified that a question should be answered, you should think about how to collect the measurement data. At this point, you can assume that this intellectual capital value driver has probably been measured before, and that someone has designed a method for measuring it, so don't re-invent the wheel. Do some research on already developed measurement methods. This can usually be done with simple Internet searches. If methods already exist (the most likely case), then it is important to assess whether any of them are appropriate to use. Not all methods will be useful for your purpose. If no appropriate methods seem to exist, you will need to design new measurement methods.

For both existing and newly developed methods, it is important to assess (a) whether it is possible to collect meaningful data, and (b) whether the data will help to answer your questions. Finally, it is important to assess whether the resultant data warrants the cost and efforts of measurement (which can be significant). If no meaningful data can be collected, if the data is not really helping you to answer the KPQ, or if the costs are not justified, then it is necessary to rethink and design different indicators.

After you have developed indicators, it is necessary to identify (a) the measurement instrument, i.e., how the data will be collected (e.g., survey or interviews); (b) the source of the data; (c) the formula used to compute the indicator; (d) the frequency of measurement; (e) any targets or benchmarks; (f) who will measure; (g) how long the indicator will be collected before it needs to be reviewed; (h) the target audience for this indicator; and (i) the reporting formats. Below, we look at developing key performance questions and designing performance indicators in more detail.

Designing Key Performance Questions™

Key Performance Questions (KPQs)[20] ask managers exactly what they want to know about the various intellectual capital value drivers. KPQs are asked to ensure that indicators are useful and meaningful. They make sure that we are clear about what it is we want to know. Also, by first designing KPQs we are able to ask ourselves: 'What indicators will best help us answer our key performance questions?'

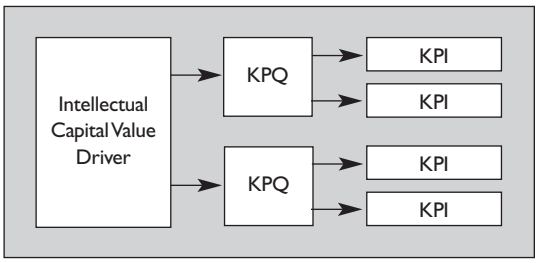
An example of how powerful KPQs can be in managing strategic performance comes from Google – one of today's most successful and most admired companies. Google CEO Eric Schmidt says[21]: *"We run the company by questions, not by answers. So in the strategy process we've so far formulated 30 questions that we have to answer […] You ask it as a question, rather than a pithy answer, and that stimulates conversation. Out of the conversation comes innovation. Innovation is not something that I just wake up one day and say 'I want to innovate.' I think you get a better innovative culture if you ask it as a question."*

Any student of science learns that it is important to know what you are looking for before you start collecting any data. If we start collecting data without knowing what we are looking for, we often collect the wrong or unnecessary data, and develop few or no insights about the really important questions we need answers to. In our desire to find measures and get our hands on the data, we often fail to clarify what it is we really want to know. For example, after deciding that the relationship with our partners is important and that we ought to measure it, we need to pause to clarify what it is we want to understand. Here is where KPQs come in – defining the question or questions we want answered forces us to more specifically spell out just what it is we want to know. Once we have the question, we then have to ask ourselves: what information will answer this question and what is the best way of collecting it?

KPQs should not be designed solely in the boardroom. Designing KPQs provides a great opportunity to engage everyone in the organization, as well as some external stakeholders. Here are some guidelines for designing KPQs:[22]

- **Design between one and three KPQs for each intellectual capital value driver:** If the intangibles matter in delivering your strategy, then you should develop management questions you want answered. Try to keep them to the vital few (see Figure 11).

Figure 11: KPQs and KPIs



- **Involve people in the process:** Try to involve people in the design of KPQs by asking them what questions they believe are most relevant. After designing a list of KPQs, get feedback from the subject matter experts or different parts within and outside the organization. For example, ask the marketing department to discuss and refine the KPQs that relate to brand and reputation. Remember that KPQs communicate to everyone what really matters to an organization, and that the more people understand and agree with these questions the more likely it is that everybody will pull in the same direction.
- **KPQs should be short and clear:** A good KPQ is relatively short, and clear. A KPQ should only contain one question. Asking a string of questions makes it much harder to guide meaningful and focused data collection. The language should be clear and not contain any jargon or abbreviations that might not be understood. Likewise, ensure that the question is clearly written, using language those in your organization (and those consulted outside) are comfortable and familiar with.
- **KPQs should be formulated as open questions:** Closed questions such as 'How many people in our organization have higher education qualifications?' or 'Have we met

our employee satisfaction target of 89%?' can be answered with a simple answer without any further discussion or expansion on the issue. However, open questions such as 'To what extent are we sharing knowledge?' or 'How well are we increasing our corporate reputation?' trigger a wider search for answers by seeking more than a 'yes' or 'no' response. Open questions make us reflect, they engage our brains to a much greater extent, and they invite explanations and ignite discussion. All of this is vital when it comes to intellectual capital.

- **KPQs should focus on the present and future:** Questions should be phrased in a way that addresses the present or future: "Are we increasing our market share?" instead of questions like "Has our market share increased?" By focusing on the future, we open up a dialogue that allows us to 'do' something about the future. We then look at data in a different light, trying to understand what the data and management information means for the future. This helps with data interpretation and ensures that we collect data that helps to inform our decision making.
- **KPQs are refined through usage:** After KPQs have been created, their answers should be evaluated, to see how well (a) the performance indicators answer the questions, and (b) the indicators help people to make better informed decisions. Once KPQs are in use, it is possible to refine them to improve their focus.

Below, we have listed some example KPQs to illustrate how organizations have developed key performance questions for some of their intellectual capital value drivers:

- To what extent are we enhancing our international reputation?
- How well are we sharing our knowledge?
- To what extent are we retaining the talent in our organization?
- How well are we promoting our services?
- How do our customers perceive our service?
- How effective are we in managing our relationships?
- How well are we innovating?
- How well are we communicating in our organization?
- How well are we working in teams?
- How well are we building our new competencies in X?
- To what extent are we continuing to attract the right people?
- How well are we fostering a culture of innovation and continuous improvement?
- To what extent do people feel passionate about working for our organization?
- How well are we helping to develop a coordinated network to perform clinical trials?
- How motivated is our staff?
- How well are we sharing one set of values?
- How well are we protecting our intellectual property?

Designing Performance Indicators for Intellectual Capital

Once we have the KPQs and know what it is we want to know, we can design performance indicators for our intellectual capital. Over the past decade, many tools and techniques have been developed to measure intellectual capital. Sophisticated measurement and analysis methods are usually used in fields such as physics and financial accounting, which have a long history of measurement and already have reliable quantitative measurement instruments. The measurement of intellectual capital is a relatively young field, without many generally accepted measurement instruments. It is natural that areas of measurement evolve and improve over time, and that more generally accepted methods will emerge. For example, temperature was considered very qualitative and immeasurable until Daniel Fahrenheit developed the mercury thermometer to measure it. Today, we all accept this form of measuring temperature. We will see similar evolutions for areas of intellectual capital.

Most measures of intellectual capital are indirect or proxy measures. For example, in measuring work-related competencies we might use the number of people with vocational qualifications as a proxy measure. Or, if we want to measure trust in our organizations, we collect survey data as proxies. This is completely legitimate and something we do in other more sophisticated areas of measurement. Just think of temperature, where we measure the expansion of mercury, or time where we measure the rotations of cogs.

The one danger with using proxy measures is that we sometimes oversimplify the process and simply measure what is easy to count. For

example, we might want to understand intelligence but just measure IQ test scores. Another problem is that we tend to focus on numbers more than their meaning. As Dee Hook, founder of the Visa network, rightly said *"in years ahead, we must get beyond numbers and the language of mathematics to understand, evaluate and account for such intangibles as learning, intellectual capital, community, beliefs and principles, or the stories we tell of our tribe's values and prosperity will be increasingly false."*[23]

Words such as **performance assessment** seem more appropriate in this context than 'measurement.' Assessment goes beyond the assignment of numbers. Instead, we should assess performance by systematically collecting information to enable us to gain the required insights and answer our KPQs. Performance assessment can take the form of numbers, but should also include written descriptions, symbols, or color codes.

Furthermore, when it comes to intellectual capital, the word **indicator** rather than 'measure' seems to more appropriately reflect indirect measurement using proxy indicators. An indicator 'indicates' a level of performance, but it does not claim to 'measure' it. For example, a new indicator to assess customer satisfaction levels will indicate how customers feel; however, it will never 'measure' customer satisfaction in its totality.

We often associate counting with objectivity and reliability, and perception-based data with unreliability. This belief needs to change when it comes to intellectual capital. Many studies have shown that perceptual assessments are as reliable, if not more reliable, than archival data.[24] Perception data can (a) provide richer insights into the real level of performance, and (b) allow us to actively involve people in assessing performance. We can involve people by asking them, for example, to rank competitors, evaluate the service delivery or organizational culture, or assess the level of relationships with different suppliers. These assessments can take the form of numbers or grades; however, they can also be represented by symbols such as traffic lights or thumbs up or down, as well as by written assessments. Written assessments capture much more information, allowing us to more naturally communicate assessment outcomes. If numbers are used to assess intellectual capital, it usually makes sense to supplement them with at least a comment field to provide some explanatory narrative.

An important step in designing indicators for intellectual capital value drivers is to decide on the **measurement instrument** that will be used to collect the data. Before designing any new instruments, it is important to check what has already been developed and used by others. When deciding on the instrument, it is important to keep the KPQ in mind when assessing whether meaningful data can be collected. In many areas of intellectual capital, improved measurement instruments have led to more insightful and meaningful performance indicators.

The most suitable measurement method is most likely simpler than you first think; also, you usually have access to more data than you expect. Designing the right measurement instrument might only require more resourcefulness.[25] For example, instead of using the ubiquitous and intrusive customer satisfaction survey, many service providers, such as hotels or banks, now use focus groups to identify what really matters to their target customers. They then employ professional mystery shoppers/users to assess service levels against the identified criteria. Call centers, for example, used to count only the number of abandoned calls, or call duration, as measures of customer service delivery. Now they use instruments such as audio taping telephone conversations between service agents and customers, and use coaches to randomly listen to conversations to assess the qualitative aspects of call handling. To enable the user to consider different measurement instruments, we present below an overview of different instruments for measuring intellectual capital value drivers:

- *Surveys and Questionnaires* provide a relatively inexpensive way of collecting data on intellectual capital from a large pool of people who might be at different locations.[26] This can be done via mail, e-mail, internet, or telephone. One big problem with this is the huge influx of surveys over the past few years, as more and more organizations require data for their non-financial indicators. As a consequence, it is now harder to persuade people to complete a survey. It is always a good idea to reduce the amount of time and effort required to collect performance data, not only for your organization, but also for your customers, employees, suppliers, etc. Surveys are regularly used to measure intellectual capital value drivers such as employee engagement, corporate culture, customer attitudes, innovation climate, or brand image.
- *In-depth interviews* are guided conversations with people, rather than the structured queries found in surveys. They put forward open-ended (how, why, what) questions in a conversational, friendly, and non-threatening

manner.[27] Interviews can be conducted face-to-face, or via telephone or video-conference. Interviews, which enable interaction directly with respondents, may provide new insights about performance. They provide examples, stories, and critical incidents that are helpful in understanding performance more holistically.[28] In-depth interviews can, for example, be used to assess intellectual capital value drivers such as relationship with key customers, suppliers, or partners. In addition to providing a performance score, they can also yield invaluable contextual information about, for example, how to improve relationships between key customers, partners, or employees.

- *Focus groups* are facilitated group discussions (5-20 participants) in which participants can express and share their ideas, opinions, and experiences. They provide a unique and interactive way to gather information, and allow the collection of rich, qualitative information. Focus groups are good ways of assessing employee- and customer-related intellectual capital value drivers such as customer experience, customer or staff engagement, team-working climate, or trust.
- *Mystery shopping approaches* assess a service by using a 'secret shopper' posing as a client or customer. Some companies hire their own mystery shoppers; other firms hire external suppliers to provide this service. The beauty of this assessment approach is that it is less intrusive than surveys or interviews. Many retail businesses, banks, and hotels have used mystery shopping to assess customer experience. Trained mystery shoppers can also be used for many other intellectual capital assessments, such as assessing an organization's culture or atmosphere.
- *External Assessments*. External organizations and institutions can provide independent performance assessments and indicators. Good examples of external assessments are independent surveys that measure the brand recognition, customer awareness, or market share in specific segments. An independent company creates a set of criteria, and then measures everyone against these criteria to assess, for example, the relative position or values of brands or corporate reputations. The advantage of external and independent assessments is that the data they provide allows comparisons between organizations. However, external assessments might be too generic, and often use assessment approaches that don't provide the answers to the internal KPQs. External assessments are best used to supplement, cross-check, and validate other internal indicators.
- *Observations* allow us to collect information by observing situations or activities with little or no manipulation of the environment. The observer can either take the role of a passive onlooker / outsider, or can become involved in activities and, therefore, take the role of partial or full participant. "The power of using observation methods is that it engages all of our senses not just our sight. It enables us to take in and make sense of the entire experience through our nose (smell), eyes (sight), ears (hearing), mouth (taste), and body (touch). Unlike other data collection methods, observation data can provide us with a more holistic understanding of the phenomenon we're studying."[28] Observation outputs can take the format of score sheets, check lists, narrative reports, and video or audio taping. Observations have been successfully used in assessing organizational culture, skill and experience levels of employees, emotional intelligence, and creativity. Another example is employee safety. Instead of waiting for accidents and injuries to occur and then count those, so-called Safe Behavior measures can be used: Observers pro-actively look for safe behaviors that would prevent the most common accidents, and record those on a behavioral observation form. This information can then be shared, providing immediate feedback on potentially unsafe behavior.
- *Peer-to-peer* evaluation is the assessment of performance by participants who vote on or assess each other's performance, either openly or anonymously. This enables people to learn from each other, and to consider their own performance from the perspective of others. Peer-to-peer evaluations have been successfully used to gauge intellectual capital value drivers, including trust, knowledge and experience, teamwork, and relationships.

There are many more fascinating ways of collecting qualitative performance data – for more information and an example see the *Handbook of Qualitative Research*.[29] To guide the indicator design, we have developed an intellectual capital indicator

template (see Figure 12) that can be completed following the model described in Figure 10.

The top part of the template states the intellectual capital value driver that is being assessed, the KPQ, and Ownership of the question. ***Ownership*** identifies the person(s) or function(s) responsible for managing the intellectual capital value driver that is being assessed. Every indicator should be given a clear name.

The ***Data collection method*** describes the method or instrument used to assess the intellectual capital value driver. As discussed above, selecting the appropriate data collection method is important. It is important to consider the strengths, weaknesses, and appropriateness of different data collection methods. Here, the designer of an indicator should briefly describe the data collection method, specify the source of the data, state how often the data is to be collected, identify the scale to be used to measure it, and identify who is in charge of collecting and updating the data.

Source of the data identifies where the data comes from. This ensures that the designer of an indicator ask a number of questions about the access to data. Is it readily available? Is it feasible to collect it? Will the data collection method, for example interviews with senior managers, provide honest information? If not, maybe different data collection methods could be combined?

Frequency of data collection identifies how often the data for that indicator should be collected. Some indicators are collected continuously, others hourly, daily, monthly, or even annually. It is important to decide what frequency will provide sufficient data to answer the KPQ, and how regularly it is feasible to measure. Organizations might want to continuously track indicators of website usage, because some of them might be readily available from server reports. External indicators for brand ranking, for example, might only be available once or twice a year. One of the biggest pitfalls of intellectual capital measurement is that data is not collected frequently enough. For example, many organizations conduct employee surveys once a year or even every eighteen months. This is not very useful, as the time between the assessments is too long, and impacts of corrective actions cannot be tracked. Instead of surveying all employees once a year, it is possible, for example, to survey a representative sample (let's say 10%) of employees every month. Individuals will still complete a survey once a year, but the organization receives monthly information that allows them to answer their KPQs and act on the data much more quickly.

Formula / scale / assessment – Here, the designer of the indicators identifies how to capture the data. It may be possible to create a formula. Or an aggregated indicator or index that is composed of other indicators may be used. Here the designer also specifies (a) which of the following scales is to be used: nominal (numbering of categories, e.g., football players); ordinal (determination of greater or less, e.g., street numbers); interval (determination of intervals, e.g., degrees Fahrenheit or Celsius); and ratio (determination of equality and ratio in a continuum with a real zero, e.g., length, time, temperature in Kelvin); or (b) whether the indicator cannot be expressed in any numerical form.

Targets and performance thresholds identify the desired level of performance in a specified timeframe (e.g., 5% increase of market share by the end of March next year). Many firms use 'traffic lighting' to illustrate performance levels. Here, the designer of an indicator would specify the thresholds for red (under-performance), amber (medium performance), green (good performance), and sometimes blue (over-performance). Here, it is also worth thinking about internal or external benchmarks; these can be derived from past performance, from other similar organizations or departments, or from forecasts.

Data entry identifies the person, function, or external agency responsible for data collection and data updates. This could be an internal person or function, or an external agency, because many organizations outsource the collection of specific indicators. Outsourcing is especially common for indicators such as customer satisfaction, reputation, brand awareness, and employee satisfaction.

Expiry / revision date – Indicators are sometimes introduced only for a specific period of time (e.g., for the duration of major projects, or to keep on eye on restructuring efforts). It is common practice to introduce a significant number of indicators once and collect data forever, because no one ever goes back and identifies the indicators that are no longer needed. Other obviously temporary indicators are introduced without giving them an expiration date; however, for those indicators a revision date should be set that allows the designers to review the template and check whether it is still valid.

Figure 12: Indicator and Index Design Template (Source: Marr 2006)

TEMPLATE FOR DESIGNING KEY PERFORMANCE INDICATORS	
Intellectual Capital Element being Assessed:	Name the strategic element from the Value Creation Map which is being assessed with this indicator.
Key Performance Question(s)™	Name the question(s) related to performance that this indicator is helping to answer.
Ownership / Person Responsible / Champion / Coordinator	Identify the person(s) or function(s) responsible for the delivery / performance of the measured strategic element.
Indicator Name	Pick a short and clear indicator name.
Data Collection Method / Instrument	Describe how the data will be collected.
• **Source of Data**	Describe where the data will come from.
• **Frequency**	Describe how frequently this indicator will be collected. If possible, include a forward schedule.
• **Formula / Scale / Assessment**	Describe how performance levels will be determined. This can be qualitative, in which case the assessment criteria need to be identified, or it can be numerical or using a scale, in which case the formula or scales with categories need to be identified.
• **Targets and Performance Thresholds**	Identification of targets, benchmarks, and thresholds for traffic lighting.
• **Data Entry**	Name the person or role responsible for collecting and updating the data.
Expiry / Revision Date	Identify the validity date of this indicator, or when it will have to be revised.
How much will it cost or what will the person / days required be to collect the data and is it justified?	Estimate the costs incurred by introducing and maintaining this indicator.
Reporting	
• **Audience / Access**	Name the key audience for this indicator and clarify who will have access to it.
• **Reporting Frequency**	Outline how frequently this indicator will be reported to the different audiences (if applicable).
• **Reporting Formats**	Describe how the performance indicator will be presented (numerical, graphical, narrative formats). Here it is good to especially think about visual representation that makes it easy to understand and digest.

Estimated costs – Another aspect that should be considered is the cost and effort required to introduce and maintain a performance indicator. Many managers and measurement experts assume that creating and maintaining measurement systems does not incur significant costs. On the contrary, however, measurement is expensive, especially if the indicators are supposed to be relevant and meaningful to aid decision making and learning. Costs can include the administrative and/or outsourcing costs of collecting the data, as well as the cost of analyzing and reporting on the performance. It is important to ensure that the costs and efforts are justified.

Reporting – Here, the designer of an indicator identifies how to report the performance indicator, identifying the audience, access restrictions, the reporting frequency, and reporting formats.

Audience and access identifies who will receive the information on this performance indicator. Reports on indicators can have different audiences. It might therefore be a good idea to identify primary, secondary, and tertiary audiences. The primary audience will be those directly involved in the management and decision making related to the strategic element that is being assessed. The secondary audience could be other parts of the organization that would benefit from seeing the data. A possible tertiary audience could be external stakeholders.

Reporting frequency identifies how often to report on this indicator. If the indicator is to

support decision making, then it needs to provide timely information. The reporting frequency can differ from the measurement frequency. An indicator might be collected hourly, but only reported on at a quarterly performance meeting.

Reporting formats identify how best to present the data. They should clarify whether the indicator is reported as, for example, a number, a narrative, a table, a graph, or a chart. The best results are usually achieved if performance is reported in a mix of numerical, graphical, and narrative formats. Considerations here also include the presentation of a data series and past performance. A graph containing past performance might be very useful to analyze trends over time; this could also include targets and benchmarks. Increasingly as well, organizations use traffic lights or speedometer dials to present performance data.

When designing any indicator for the intellectual capital value drivers, it is essential to constantly evaluate the validity and information value of the indicators. The following questions are relevant. To what extent do the indicators enable us to assess the particular intellectual capital element? How well do the indicators help us answer the KPQ(s)? If the indicator is not providing us with the required information, we should not measure it at all.

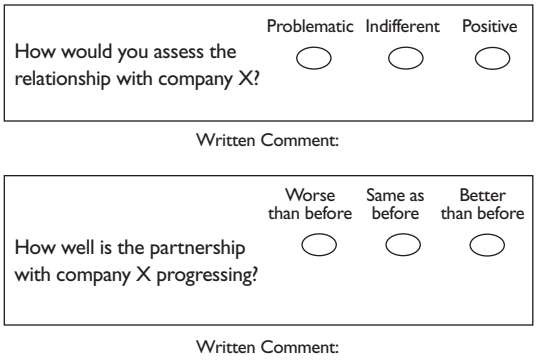
When it comes to intellectual capital, a single performance indicator will rarely give us sufficient information. We therefore recommend combining different measures into one index. This provides organizations with a more rounded and balanced view on their intellectual capital. Human health allows us to illustrate the point. Only taking your blood pressure to assess your heath would not be sufficient. However, taking blood pressure, cholesterol and blood tests, together with a number of other tests, and combining these into a health index, provides a much more balanced and reliable assessment of physical health. The same is true in business. If a company wants to measure customer relationships, a number of indicators such as loyalty, trust, commitment, profitability, and referrals can be measured and combined into a customer relationship index. We outline below two illustrative examples of how organizations have applied the indicator design model in practice.

Case study: Measuring Partnerships at InterCorp[30]

A major blue chip company, InterCorp, wanted to measure its partnerships with its key suppliers, an important intellectual capital value driver. Initially, InterCorp didn't develop KPQs. Instead, it tried to find the quickest and easiest way to get some data. After some research, InterCorp identified an external company that specialized in partnership evaluations. This company had designed a generic questionnaire to measure partnerships. InterCorp outsourced its data collection to this company, who then started to collect the partnership data twice a year. Initially, InterCorp was pleased with the service, as the external company provided it with detailed reports containing graphs, tables, and trend analyses on about 50 different questions on the survey. Although, on the surface, InterCorp seemed happy with how things were going, the partners were telling a different story. They believed that a lot of unnecessary data was collected, which took them a lot of time and effort (about 6 man-days for each survey). It very quickly became clear that all of the data InterCorp were collecting was 'interesting to know,' but only that. Not one decision based on the survey data had been taken over the past three years.

InterCorp went back to the drawing board and identified the question(s) they really wanted answered. The KPQ they came up with was "How well are our partnerships progressing?" After deciding on this KPQ, they then asked themselves what data they would need to answer this question, and how best to collect the data. InterCorp needed data that would assess the relationships, but didn't want to use the same survey again, as it was collecting too much unnecessary data. After some deliberation and research, InterCorp agreed that the best approach would be to ask its relationship managers or account managers for an assessment. InterCorp realized that its own account managers would be able to make this assessment without the need for a lengthy survey. InterCorp designed a system that automatically e-mailed a very simple form to the account managers with just two questions: "How would you assess the relationship with company X?" and "How well is the partnership with company X progressing?" The form included a scale next to the question. Initially this was a 10-point scale, from *very bad* to *very good*. This was later refined into a 3-point scale. In addition, the form also included a field for a written comment (see Figure 13). Account managers were asked to assess the partnerships by ticking a box on a scale and by providing a short written comment on why they picked that particular assessment.

Figure 13: Partnership KPQs



InterCorp realized that asking only the account managers might produce a biased view on the situation, so it decided to also e-mail a modified form to its partner companies. Preferring not to ask for any written assessment, the form used for the partner companies only included the two scaled questions. After account managers and the partner companies had completed the short survey, the results were compared in a database. In over 95% of the cases, the internal and external assessments were identical. Where major differences in opinion occurred, the database triggered another e-mail to the internal account manager, prompting him or her to pick up the telephone and discuss any potential issues with the partner organization. InterCorp also realized that it was not collecting such data frequently enough. They decided that monthly data was required to be able to react to potential issues before they became big problems. InterCorp now has a very simple and cost-effective monthly performance measurement system in place, one that allows it to get all the information needed to answer its KPQ about partnerships with its suppliers, one of its critical intellectual capital value drivers.

Case study: Measuring staff engagement at TradeBank[31]

TradeBank is a leading Trading Bank that believes that its people, with their skills and knowledge, are its most important intellectual capital value drivers. TradeBank believed that one of the key enablers of success was the level of staff engagement. In the past, they had conducted traditional staff satisfaction surveys, but found that even though people might have indicated satisfaction with their jobs, many were not engaged. Managers in TradeBank believed that engagement is much more important than staff satisfaction, as it indicates how passionately people feel about their jobs, and how connected they feel to the organization. According to the Gallup Organization, engaged employees are passionate about what they do, feel a strong connection to their company, and perform at high levels every day while looking for ways to improve themselves and the company as a whole. Unengaged employees on the other hand show up every day and put in just enough effort to meet the basic requirements of their jobs. Without passion or innovation, these employees neither commit to the company's direction, nor do they work against it. Actively unengaged employees present a big problem for businesses. Negative by nature, these people are unhappy in their work, and they compound their lack of productivity by sharing this unhappiness with those around them. According to Gallup Research, an average organization has about 25% engaged employees, just over half not engaged employees, and just under a fifth actively disengaged employees. TradeBank was keen to improve its ratio and ensure that more employees were closely engaged.

Managers in TradeBank agreed to the following KPQ: "To what extent are our employees engaged?" In their research of existing data collection methods, they came across the Q12 survey tool[32] that was developed by the Gallup Organization. This 12-question survey was designed to assess engagement, especially on an emotional level. After some deliberation, TradeBank felt that this survey would allow it to gain the information to answer its KPQ. In addition, the survey would allow TradeBank to benchmark itself with its competitors. The following 12 questions, based on the Q12 survey, were incorporated into TradeBank's staff survey:

1. Do I know what is expected of me at work?
2. Do I have the right materials and equipment I need to do my work right?
3. At work, do I have the opportunity to do what I do best every day?
4. In the last seven days, have I received recognition or praise for doing good work?
5. Does my supervisor or someone at work, seem to care about me as a person?
6. Is there someone at work who encourages my development?
7. At work, do my opinions seem to count?
8. Does the mission / purpose of my organization make me feel my job is important?
9. Are my coworkers committed to doing quality work?

10. Do I have a best friend at work?
11. In the last six months, has someone at work talked to me about my progress?
12. This past year, have I had opportunities at work to learn and grow?

TradeBank decided to poll a representative sample of its employees every month to regularly check for possible changes. Each employee still receives a survey only once a year, but the company gets valid data every month to answer its KPQ question and to test the impact of staff engagement on retention, satisfaction, and performance levels. In TradeBank, the results of staff engagement are reported to the senior management team monthly. The data is provided in aggregated form (staff engagement index) and compared with competitor positions. Engagement is best reflected by changes over time. The data is therefore presented in a trend chart over time, together with a narrative commentary by the Human Resources Director that puts the assessment into context and extracts the key learning points.

4. Managing Intellectual Capital

Measures allow organizations to manage. This applies to management of intellectual capital. Without relevant assessments, it is impossible (a) to understand current performance levels, (b) to know whether the intellectual capital has improved or deteriorated, and (c) to understand whether any activities and initiatives have affected performance. Organizations that have meaningful performance information about its intellectual capital can use it to inform decision making, to test and review strategy, and to manage risks associated with intellectual capital. Each of these will be discussed in further detail below.

Informing Decision Making

Performance information about intellectual capital and other drivers of success provides performance feedback. This in turn underpins learning and decision making.[33] Let us use an analogy from the world of education to illustrate the appropriate and inappropriate use of performance assessments to generate feedback and learning. In schools, we tend to use exams or tests to determine the learning outcome of an academic program, let's say a language course, at the end of the program or at the end of a particular phase of the program. This is called a *summative assessment*. Summative assessments are judgments about the student's learning, usually in the form of a grade. They are seen to provide reliable and comparative data, and the assumption is that such tests will somehow lead to improvements in student learning. However, this assumption is questioned by many, because these assessments are not designed to provide contextualized feedback that is useful for helping students and teachers during the course of a program to improve learning.

By contrast, *formative assessment* provides feedback to an ongoing program, with the objective of improving learning. It occurs (a) when teachers feed performance information back to students in ways that enable the student to learn, and fine-tune or modify what they have been doing, or (b) when students can engage in a similar, self-reflective process.

In summative assessments the number or result (e.g., grade) is at the centre of attention. On the other hand, the key objective of formative assessments is improving. The former is backward looking, whereas the latter is about positively affecting the future. The problem with summative assessments is that they can lead to dysfunctional behaviors: Teachers might only teach what is important to pass the exams, with little actual learning, and students might try to do as little as they can get away with to meet the minimum requirement. Suddenly, the emphasis is not on learning, but on playing the numbers game.

We have all seen similar problems in organizations. It is therefore important to ensure that organizations do not fall into the same traps as schools do with exam results. To create effective feedback and learning from intellectual capital information, organizations need to regularly review performance. These reviews should take place monthly, and should be used to discuss the performance of the key value drivers that should lead to learning and decision making. We provide below some guiding principles about how to create formative performance review meetings in organizations, to ensure that intellectual capital indicators are used to improve learning and, ultimately, performance:

- ***Name the meeting appropriately:*** Take the word 'review' out of the name of the meeting. Its main purpose is to learn, and improve future performance. Insight from the past can help us with future decision making, but it can't be the main focus of the meeting. Therefore, call them Strategic Performance Improvement Meetings or something similar, so that the name more accurately reflects the purpose of the meeting.

- ***Use the value creation map to guide the meeting structure and agenda:*** The value creation map is used to guide the meeting, and provides a structure or agenda for the meeting. A good way to do this is to set an agenda made up of the individual elements from the strategic map.
- ***Use the key performance questions to guide and focus the discussions:*** Asking questions in an inquiring way develops a spirit of curiosity that serves as a catalyst for learning. The KPQs have been designed to raise the most important performance questions, and should therefore be used here. The KPQs can then become the agenda items or even headings for sub-meetings.
- ***Use performance indicators to facilitate finding answers:*** The individuals (or group of individuals) responsible for the different strategic elements take responsibility for analyzing the performance data before the meeting, with the aim of answering the posed question(s). Findings from the analysis, with their interpretations, are then presented during the meetings.
- ***Create an atmosphere of purpose, trust, and respect:*** The atmosphere in these meetings is purposeful, but relaxed and friendly. Mutual trust, respect, and support lead to personal commitment, joint decision making, and learning. Instead of a blame culture, the focus is on future performance, dialogue, decision making, and actions. A chairman ensures that all agenda items are fully discussed and that any dialogue is constructive and aimed at improving future performance.
- ***Ensure that collaborative decision making and learning takes place:*** The performance information is openly discussed, and the performance indicator data is used to inform the dialogue and joint decision making.

The steps outlined here provide the ingredients for successful Performance Improvement Meetings. They are an essential ingredient in understanding and managing intellectual capital, and can be used to inform strategy reviews.

Test and Review the Strategy

The strategic assumptions expressed in the value creation maps are principally just that – assumptions. However, maps that are developed correctly, with the participation and involvement of as many key people as possible, usually reflect reality extremely well. Nevertheless, many organizations want to 'test' their assumptions and collect 'evidence' of their correctness. The performance data derived from the performance indicators can be used for that purpose, and the value creation map, or parts of it, can be verified.

Chris Ittner and David Larcker from the Wharton School in Pennsylvania found in their survey of leading companies that (a) just over 20% of them consistently laid out the cause-and-effect relationships between chosen drivers of strategic success and outcomes, and (b) even fewer actually verified these causal models. And yet, those companies who did, achieved on average, an almost 3% higher return on assets, and an over 5% higher return on equity than companies that didn't use cause-and-effect maps.

Organizations can identify sub-sets of their causal value creation map or individual linkages between elements of the map, and then 'test' those using statistical tests such as regression and correlation analyses. Various companies have successfully tested relationships between elements of their strategy. One example comes from Sears, Roebuck and Co., a leading retailer that offers a wide range of home merchandise, apparel, and automotive products and services through more than 2400 stores in the USA and Canada. Sears wanted to validate the relationship between employee satisfaction, customer satisfaction, and sales volumes – a key output measure. Arthur Martinez, CEO of Sears at the time, initiated this effort to understand and test the drivers of performance. Sears collected data to test the assumed relationships between sales volume, customer satisfaction, and employee satisfaction. Analyzing this data, Sears was able to validate its assumptions and establish that a 5-point increase in employee satisfaction led directly to a 1.3-point increase in customer satisfaction, and a 0.5% higher sales volume over a 9-month period.

Mapping and verifying how intangible value drivers impact firm performance is powerful, and can support reviews of the strategy. These reviews can lead to different resource allocations, outsourcing or insourcing, and decisions whether to buy or sell intellectual capital as well as mergers and de-mergers. Intellectual capital that is central to the value proposition of organizations needs to be tightly managed internally. The absence of some vital intellectual capital components can lead to purchasing, licensing-in or merger and acquisition decisions. If an organization possesses intellectual capital that is not relevant to the current value proposition this could be sold or licensed out.

Manage Intellectual Capital Risks

After identifying critical intellectual capital value drivers, organizations need to manage any related potential risks. Although companies are familiar with the management of financial risks and disaster risk, the risk management of intellectual capital is usually underdeveloped. We now take a quick look at different risks associated with intellectual capital, and propose a simple risk log to manage and mitigate these risks.

- ***Human capital risks*** – A key risk that is regularly overlooked in organizations is risk related to their staff and to the knowledge they possess. Organizations are often unaware that some individuals with critical knowledge and expertise could walk out any day. Another associated risk is the fact that knowledge is an important but also very vulnerable resource – it tends to deplete over time if it is not nurtured.
- ***Structural capital risks*** – Risks to structural resources include threats to organizational processes and routines, and threats posed by losing database contents and software because of hackers and viruses. There is also an increasingly common risk of intellectual property theft, as well as the danger to business success created by more powerful regulatory regimes that are rightly intolerant of 'old school' exploitation practices.
- ***Relational capital risks*** – In today's networked economy, relationships are crucial ingredients for all organizations in both the private and public sectors. Their reputation hangs on these vital relationships, and often the risk needs to be managed throughout the supply chain that helps to deliver the products and/or services the organization sells or provides.

Risk assessment then is a highly significant factor in managing intellectual capital in today's business environment. Given that intellectual capital is a key value driver in most organizations, it is advisable to begin accumulating data that gives organizations useful information about their greatest risk exposures.

The first step in assessing risk, therefore, must be to identify possible areas of risk. The best way to do this is to review all the elements of the value creation map to identify potential risks. These risks can then be captured in a 'risk log'. This is a table that can be used to identify, describe, assess, and quantify potential risks. It often requires obtaining factual information about these risks and then prioritizing their relative importance. Organizations need to assess the potential risk areas for the component parts of their organization, categorize them, and then decide which are most important to manage.

The risk log can become a working document that is part of the Performance Management system. We outline below the various steps involved in creating such a risk log.

1. Identify potential risks for each intellectual capital value driver on the value creation map. This element-by-element approach ensures that all potential risk areas that cover all intellectual capital value drivers are discussed. Moreover, using the value creation map also helps organizations to identify how potential risk areas might impact each other. However, it is unlikely that all potential risks for each element will be identified and prioritized straightaway. The risk log will usually grow over time as more potential risk areas are identified, but some will also tend to fall away as they are either mitigated or become less relevant over time.
2. Describe the essence of the potential risks for each element. Here, it is possible to give the risk a name, but it is more important to create a short narrative *description* of the type of risk.
3. Define the *risk level*. Here, the likely consequences and potential impact of this risk are evaluated.
4. Define the *likelihood level*. Here, the likelihood that this risk might turn into a reality is evaluated. In addition, the likelihood is compared to the assessed likelihood of the last review cycle. This indicates whether the likelihood is increasing, staying the same, or decreasing.
5. Ascribe an appropriate scoring system according to: (a) the *risk level* (potential severity) of each risk (e.g., 1-5), the criteria for which may not necessarily be all financial ones, and (b) the *likelihood level* (probability of occurrence) of the risk (e.g., 1-5). These two scores can then be added to create the risk score. This scoring system not only helps to identify management priorities, but also to assess whether the likely severity of each risk has changed, and whether the firm's potential exposure to it has increased or diminished since the last review.

6. Assign responsibility (ownership) for managing each defined risk, and define a review frequency for re-evaluation of subsequent risk mitigation activities.

Completing the risk log is best done within a project team. Different sub-teams can be assigned to assess the risks of the different intellectual capital elements of the value creation map. This ensures that people who are knowledgeable in the subject matter work together and arrive at either a unanimous or an aggregate score.

5. Reporting Intellectual Capital

The final step is then to report the intellectual capital, which will be the subject of this final section. Disclosing the value of intellectual capital can be done for different reasons. However, they all share one key objective, which is to provide information about the intellectual capital of an organization to its stakeholders. However, different stakeholders have different information needs:

- To make better informed investment decisions, ***shareholders*** and ***investors*** want to know more about the intellectual capital an organization possesses. Traditional accounting based reports that used to serve this purpose do not paint an adequate picture of an organization's intellectual capital. If investors do not fully understand the organization and its intellectual capital value drivers, their valuations are less certain, and any uncertainty generally increases the costs of capital.
- ***Analysts*** want to better understand the intellectual capital value drivers to better value organizations. Without detailed information about the intellectual capital a company possesses, and an understating of how it helps them to deliver their strategy, analysts can make incorrect valuations. This leads to volatility and uncertainty, which in turn leads to investors and banks placing a higher risk level on organizations. This then increases the cost of capital.
- ***Employees*** want to understand the health and position of their organization, and today intellectual capital is an essential element of this. They are especially interested, as they form a major part of this intellectual capital and need to understand that the organization has processes in place to develop, manage, maintain, and protect its intellectual capital.
- The organization has an interest in communicating its position to ***partners***, ***suppliers***, the ***wider public*** (including potential future employees), all of whom have an interest in understanding the future value of an organization.

The Limitations of Traditional Financial Reporting

The answer to whether or not traditional financial reporting can deliver on these information needs is simply No! There is now widespread agreement that the current financial reporting system is incapable of explaining the value of intellectual capital. Restrictive accounting rules mean that most intellectual capital cannot be included on the balance sheet, especially if it is internally developed. Instead, all cost incurred to develop intellectual capital must usually be directly charged as expenses in the income statement. For companies that invest in intellectual capital, this immediate expensing results in a reduction of the current profit and financial position. The problem is that accounting standards specify that a company can only recognize an asset if (a) it is identifiable, (b) it is controlled, (c) it is probable that future benefits specifically attributable to the asset will flow to the enterprise; and (d) its cost can be reliably measured. This considerably reduces the list of intellectual capital items that are recognized in financial reporting. Regardless of the long list of intangible resources relevant to organizations, the categories recognized in accounting are very limited; they mainly refer to: (a) goodwill, (b) research and development, and (c) other identifiable intangibles such as patents, software, licenses, copyrights, or brands. Goodwill is an all-inclusive asset category defined as the excess of the cost of an acquired company over the sum of identifiable net assets. In many acquisitions, the purchase price is higher than the value of the net assets included in the balance sheet. Goodwill therefore allows firms to account for the 'unidentifiable assets and liabilities' that cannot be recognized in the firm's balance sheet using current accounting standards. Goodwill therefore only appears in acquisition transactions. Furthermore, although identifiable intangible assets may be acquired separately, as a part of a group of assets or as part of an entire enterprise, unidentifiable assets cannot be acquired separately. Also, internally generated goodwill is not recognized in balance sheets, and, together with other intangibles, has to be expensed immediately along with investments in advertising, training programs, customer lists, and start-up costs[34].

The restrictive accounting rules have caused huge confusion in understanding the available information on intellectual capital in traditional financial reporting, making them unsuitable as useful information sources about intellectual capital.

Voluntary Reporting of Intellectual Capital

Various initiatives to address the limitations of traditional financial reporting have created frameworks and guidelines for separate reports to disclose information on intellectual capital. These initiatives have mainly been in Europe, where various governments and the European Commission have sponsored such projects. The first of its kind was sponsored by the Danish Government, with the aim of designing guidelines for firms to prepare intellectual capital statements. The guidelines were then tested with about 100 firms and not-for-profit organizations who experimented with producing intellectual capital statements. Following this test phase, guidelines were issued by the Danish Government on how to prepare intellectual capital statements.[35] This was followed by a number of projects funded by the European Commission to produce guidelines for intellectual capital reporting.[36] More recently, initiatives in the German-speaking part of Europe (Austria, Switzerland, and Germany) have created frameworks for intellectual capital statements (called 'Wissensbilanz'). The German initiative is supported by the German Government, and a working group has been set up to coordinate research and practical application of these voluntary reports on intellectual capital. The latest initiative is InCaS (Intellectual Capital Statements – Made in Europe), which has just started. It is an attempt to bring all the previous developments together into one European Framework of intellectual capital reporting.

The various guidelines are all very similar. They all (a) provide a breakdown and classification of intellectual capital (which are in line with the classification outlined in this MAG), (b) provide some guidance on the identification and measurement of intellectual capital, and (c) outline a template or blueprint for reporting intellectual capital in intellectual capital statements.

The drawback of these voluntary reports is that the content of actual intellectual capital statements varies widely in what is reported and measured. This in turn makes it difficult to compare organizations, which is one of the objectives and deliverables of traditional financial reporting. One could therefore argue that these reports are not very useful. However, the value of intellectual capital can only be understood in the context of an organization's unique strategy. Also, to be relevant and meaningful, many indicators of intellectual capital will be specific to organizations or sectors. This is why these reports need to include different indicators to reflect the unique nature of the strategy and associated intellectual capital. However, this doesn't mean that there will never be more widely accepted indicators for intellectual capital that are appropriate across entire industries and that will facilitate some kind of comparison. Even though external reporting on intellectual capital still has some way to go, many organizations have produced voluntary reports[37] and discovered clear benefits, including improved understanding of the strategy by its stakeholders, as well as improved image and reputation.

Building on the different guidelines and blueprints for intellectual capital reports produced to date, we encourage organizations to produce and publish intellectual capital reports. These reports can be used to communicate the importance of intellectual capital both internally to staff as well as externally to business partners, suppliers, investors, and the wider public. However, they are only successful if they are set in the context of the organizational strategy, and if they go beyond the mere reporting of measures to include narrative and interpretive commentary.

Good intellectual capital reports contain the following elements:

- A brief ***introduction*** outlining the strategic context and the key strategic challenges the organization will be facing. This part of the report should set the scene by describing the anticipated changes in the external and internal context and their strategic implications for the organization. [about one page long]
- A brief ***narrative description of the strategy*** and visual representation of the organizational ***value creation map***. It is important to highlight the interdependencies and causal relationships between the different elements of the strategy and, in particular, how the intellectual capital value drivers help to deliver the strategy. [the strategy narrative should be about 2 pages long]
- ***Descriptions of each of the intellectual capital value drivers.*** More detailed descriptions should be provided for each of the intellectual capital value drivers, outlining the objectives, strategic targets,

and associated activities for each. Where possible, data and performance indicators should be used to clarify the objectives and targets. A brief description of the key activities (tasks, projects, programs) that are planned to help achieve the objectives should be provided [each description should be between one-half and one page long].

CONCLUSION

Success and value creation of any organization in today's economy is driven by intellectual capital. To positively impact the future success and value, it is therefore critical to manage the intellectual capital that underpins value creation. This MAG introduces five key steps for successfully managing intellectual capital, namely (1) how to identify intellectual capital in your organization, (2) how to map its impact, (3) how to measure it, (4) how to manage it, and (5) how to report it. Practical and easy-to-apply tools and techniques have been introduced, including (a) an intellectual capital classification and identification approach, (b) value creation maps to show how intellectual capital supports the organizations in delivering its objectives and value proposition, (c) key performance questions to guide the design of indicators, (d) techniques of measuring intellectual capital together with an indicator design template, (e) guidelines about strategic performance improvement meetings that facilitate decision making and learning, (f) an intellectual capital risk management tool, as well as (g) guidelines on how to produce intellectual capital reports. Together, these tools and techniques should provide a solid platform enabling practicing managers and accountants to better manage intellectual capital – a skill that will become ever more critical to organizations in the global knowledge economy.

USEFUL WEBSITES

- Advanced Performance Institute: www.ap-institute.com
- The Gurteen Knowledge Website: www.gurteen.com
- Intellectual Assets Centre: www.ia-centre.org.uk
- InCaS Intellectual Capital Statements: http://www.psych.lse.ac.uk/incas/
- Intellectual Capital Services: www.intellectualcapital.nl
- Prism Project Website: www.euintangibles.net
- Working Group Wissensbilanz: www.akwissensbilanz.org

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12 See for example: Heskett, J.L., W.E. Sasser and L.A. Schlesinger, (2003). *The Value Profit Chain: Treat Employees Like Customers and Customers Like Employees*, Free Press, New York (pp. 203).

13 See also Clotier, L.M. and E.R. Gold. (2005). 'A Legal Perspective on Intellectual Capital', in Marr, B. (ed.), *Perspectives on Intellectual Capital*, Elsevier, Boston; and R. Hall (1989). 'The Management of Intellectual Assets: A New Corporate Perspective', *Journal of General Management*, Vol. 15, No. 1, pp. 53.

14 Due to strict confidentiality agreements the name of this business cannot be revealed.

15 Göran and Johan Roos have been instrumental in developing an understanding and mapping approach of resource interactions. For their insights on resource interactions see, for example: Roos, G. and J. Roos (1997). Measuring Your Company's Intellectual Performance. *Long Range Planning*, Vol. 30, No. 3, June, pp. 413; and Gupta, O. and G. Roos (2001). Mergers and Acquisitions Through an Intellectual Capital Perspective. *Journal of Intellectual Capital*, Vol. 2, No. 3, pp. 297-309; and Pike, S. G. Roos and B. Marr (2005). Strategic management of intangible assets and value drivers in *R&D organizations*. R&D Management, Vol. 35, No. 2. pp. 111-124.

16 See e.g. Carmeli, A. and A. Tishler (2004). 'The Relationships Between Intangible Organizational Elements and Organizational Performance', *Strategic Management Journal*, Vol. 25, pp. 1257-1278.

17 Usually 12 months, which is in line with the annual planning cycle of most organizations, but this can be shorter or longer depending on the dynamics in the external environment.

18 One of the earliest uses of influence diagrams was by J. Forrester to represent a causal loop in a feedback system. Later, Professor Ronald Howard from Stanford University and his colleague, Dr James Matheson, refined and popularized influence diagrams. See: Howard, R. A. and J. E. Matheson (1990). *Principles and Applications of Decision Analysis*, Volume I. Strategic Decisions Group: Menlo Park, California; and Howard, R. A. and J. E. Matheson (1990). *Principles and Applications of Decision Analysis*, Volume II. Strategic Decisions Group: Menlo Park, California; and Howard, R. A. (1965) Dynamic Inference, *Journal of the Operations Research Society of America*, Vol. 13, No. 5, Sept-Oct, pp. 712-733.

19 This case study is based on: Marr, B. and I. Shore (2008). *Cascading Balanced Scorecards: Using Strategic Maps to make Performance Relevant to RAF Stations*, Management Case Study, The Advanced Performance Institute (www.ap-institute.com)

[20] The concept of Key Performance Questions was developed by Bernard Marr and the terms *Key Performance Question* and *KPQ* are trademarks of the Advanced Performance Institute.

[21] Eric Schmidt in an interview with Jeremy Caplan for *TIME*, October 2, 2006.

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[27] Yin, K. (2003). *Case Study Research. Design and Methods (Applied Social Research Methods Series*, Vol. 5), Sage, Newbury Park, CA.

[28] Russ-Eft, D. and H. Preskill (2001). *Evaluation in Organization – A Systematic Approach to Enhancing Learning, Performance, and Change*, Perseus, Cambridge, MA.

[29] E.g. Denzin, N.K. and Y.S. Lincoln, (ed.) (2005). *The Sage Handbook of Qualitative Research* (3rd edition), Sage, Thousand Oaks.

[30] Please note that InterCorp is a fictitious name chosen to protect the anonymity of our client.

[31] Please note that TradeBank is a fictitious name chosen to protect the anonymity of our client.

[32] The Q12 survey tool was developed by the Gallup Organization (www.gallup.com), other staff engagement surveys are offered for example by Mercer and Satmetix Systems called *Employee Acid Test* and *Employee Commitment Assessment*.

[33] See e.g. Greve, H. (2003). *Organizational Learning from Performance Feedback: A Behavioural Perspective on Innovation and Change*, Cambridge University Press, Cambridge.

[34] In certain regulatory regimes after an acquisition transaction, some of these intangible resources will be recognized as assets apart from goodwill in the acquirer's balance sheet if they comply with the recognition criteria for "*identifiable*" assets and liabilities.

[35] Danish Agency for Trade and Industry – Ministry of Trade and Industry (2002). *A Guideline For Intellectual Capital Statements – A Key to Knowledge Management*, Danish Agency for Trade and Industry, Copenhagen,

[36] These projects included: The E*Know Net, MERITUM, PRISM projects.

[37] Best examples can be found in Scandinavia, Germany and Spain.

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