



“Key Success Factors of Knowledge Management in Multinational Corporations”

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Abstract

Knowledge is increasingly substituting old (tangible) factors of production and becomes the most important (intangible) productive means and competitive weapon for the companies. Knowledge Management (KM) provides a particular opportunity to help the employees work more effectively and intelligently under these circumstances.

Since knowledge becomes more and more important within all kinds of industries the research is aimed to analyse, identify and clarify the parameters from a multinational corporation's point of view which are influencing and facilitating the development of a company's Human Capital (HC) most and therefore can be regarded as essential for long-term corporate success

Two parts – a theoretical and an empirical one – are the main components of this dissertation. The theoretical part covers important aspects related to knowledge and KM as well as globalisation. The empirical study was based on several hypotheses developed as a result of the theoretical discussion, identifying four key success factors of KM. In order to conduct a statistical analysis the necessary data has been obtained by using a questionnaire which was sent to companies in Sweden, Germany, China, Hong Kong, Singapore and the UK.

As a result, three factors could be confirmed as being paramount whereas only one has been recognised as not being as important as expected.



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List of Abbreviations

AMOS	Analysis of Moment Structure
ANOVA	One-way Analysis of Variance
CC	Corporate Commitment
CFI	Comparative Fit Index
CKO	Chief Knowledge Officer
CV	Clarity of Vision and Strategy
FDI	Foreign Direct Investment
HC	Human Capital
HRM	Human Resource Management
IC	Intellectual Capital
IT	Information Technology
KM	Knowledge Management
MNC	Multinational Corporation
NFI	Normed Fit Index
NIH	Not Invented Here
RMSEA	Root Mean Square Error of Approximation
SBU	Strategic Business Unit
SME	Small and Medium-sized Enterprise
SPSS	Statistical Product and Service Solutions
TLI	Tucker-Lewis Index



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We are very grateful to everybody who made this work possible and inspired us during the process of writing this dissertation.



1 Introduction

1.1 Background

Doing business nowadays is different from doing business decades ago since *"companies are in the midst of a revolutionary transformation"* (Kaplan & Norton, 1996, p. 2). Peter F. Drucker explains this phenomenon more precisely when he is saying that *"the corporation that is now emerging is being designed around a skeleton: information"* (Drucker, 2001, p. 111). Companies are driven by the pursuit of growth and profitability. Competitive pressure due to the globalisation and market liberalisation is increasing and the economic playing field is constantly changing, e.g. legal requirements, customer demands and global markets. Due to such changes new opportunities arise at the same time as threats and obstacles become apparent (Wiig, 2004, pp. xxii, 1-5). Thus the demand for a suitable strategy, a guideline is essential to succeed permanently.

This means to shift the management's concentration from short term objectives to long term ones, putting emphasis on the source for sustained success: the knowledge of the employees. Knowledge is one essential component of the so-called Human Capital (HC) and is increasingly substituting old (tangible) factors of production and becomes the most important (intangible) productive means and a competitive weapon for the companies.

The importance of these new assets can be seen on the stock markets all over the world. The market capitalisation of knowledge intensive companies exceeds its book value by many times. Baruch Lev, an accounting and finance professor studied



this phenomenon in more detail and discovered a 100% increase¹ in the ratio for market value to book value of the stocks in the S&P 500 index between 1990 and 1999, showing the significance of intangible assets for corporate success (Lev, 2001, pp. 8-9). Along with these changes the concept of Intellectual Capital (IC) emerged and was used to explain the new realities and influence the management philosophy of the 21st century (Wiig, 2004, p. 19). Thus IC can be regarded a decisive factor for many companies in order to withstand the new business challenges and to capture the opportunities of today's economy (O'Sullivan, 2005, p. 134).

These strategies intend to reap the benefits from knowledge work in often large and globally active companies. Another aspect having great influence on the successful application of knowledge in such an environment is the constantly accelerating tempo with which new technologies are evolving and the increasing complexity of all kinds of tasks. Figure 1-1 shows the area of conflict a company is trapped in nowadays.

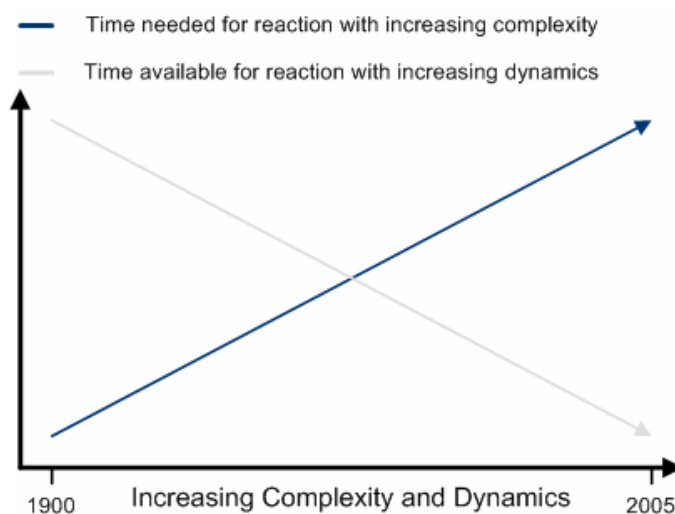


Figure 1-1: Complexity and Dynamic Processes

(Source: Adapted from Gehle & Mülder, 2001, p. 17)

¹ from 3:1 to 6:1



It becomes apparent at first glance that doing business in the 21st century is characterised by discrepancy of time needed and time available. However, Knowledge Management (KM) provides a particular opportunity to help the employees work more effectively and intelligently under these circumstances. Gehle and Mülder (2001, p. 17) conclude that the development and application of knowledge have great impact on competitiveness and innovation. Furthermore, realising such advantages necessitates a high degree of organisational flexibility.

Therefore it is important for a company to follow a clear strategy with regard to its knowledge management. The various stages within this process will eventually affect the corporate success. Major challenges for both – companies and employees occur during this process and have to be dealt with, e.g. information abundance, knowledge creation, knowledge dissemination (Bukowitz & Williams, 1999, pp. 36, 50).

1.2 Purpose

Since knowledge becomes more and more important within all kinds of industries (Kaplan & Norton, 1996, p.5) we took a closer look at the specific circumstances of knowledge management from a multi-national corporation's (MNC) point of view. Thus we wanted to analyse, identify and clarify the parameters facilitating the development of a MNC's Human Capital most and are likely to have great managerial implication for a company and therefore can be regarded as essential for long-term success.

Achieving these objectives allowed us to provide a possible framework of key success factors enabling a structured approach to KM in a way which was both simple and comprehensive enough.



Finally, this helped us to enhance the practicality of the entire knowledge management concept. General theories about IC and in particular about the concept of KM as an after-effect of IC have functioned as the starting point for this analysis. This was helpful for a theoretical foundation and clarification of the interdependencies of these components.

1.3 Research Questions

The following research questions will guide our discussion throughout the entire dissertation:

- 1. What is knowledge management (KM)?**
- 2. How can the importance of KM be explained?**
- 3. Why should MNC's consider KM a strategic success factor?**
- 4. Is it possible to pinpoint and identify crucial KM elements which show paramount significance for corporate success?**
- 5. How can these important factors of KM activities in MNC's be promoted?**

1.4 Limitations

Due to the complexity of KM as such we will only focus on aspects within an organisation and not between different companies. In addition we will not concentrate on the technological approach to accomplish KM in any company. Considering the narrow time-frame available for the dissertation we will limit and narrow down the scope of our research. Thus we will only concentrate on the



most prominent and acknowledged theories and perceptions. Furthermore we will not address company or industry specific KM activities or solutions but focus primarily on circumstances related to Knowledge Management. The limitations of the research method chosen will be mentioned in more detail when we describe our research method.

1.5 Outline

Chapter 1 provides a brief background discussion, highlights the aim of the research paper and addresses the main limitations.

Chapter 2 describes our research methodology.

Chapter 3 comprises the theoretical discussion. Hereby working definitions and insights into the main aspects related to knowledge management and international business and their connections will be provided.

Based on the theoretical framework developed in chapter 3, chapter 4 will aggregate the findings, formulate several hypotheses and explain their causal linkages to the theories discussed.

Chapter 5 includes the empirical study. Hereby we will present our questionnaire and the statistical method used.

Chapter 6 presents an analysis of the questionnaire and an evaluation of our hypotheses developed in chapter 4.

Chapter 7 concludes the discussion and comments on the prospects of knowledge management.



The structure of the dissertation is shown in figure 1-2 below, illustrating the different sections of the paper and their content related position to each other.

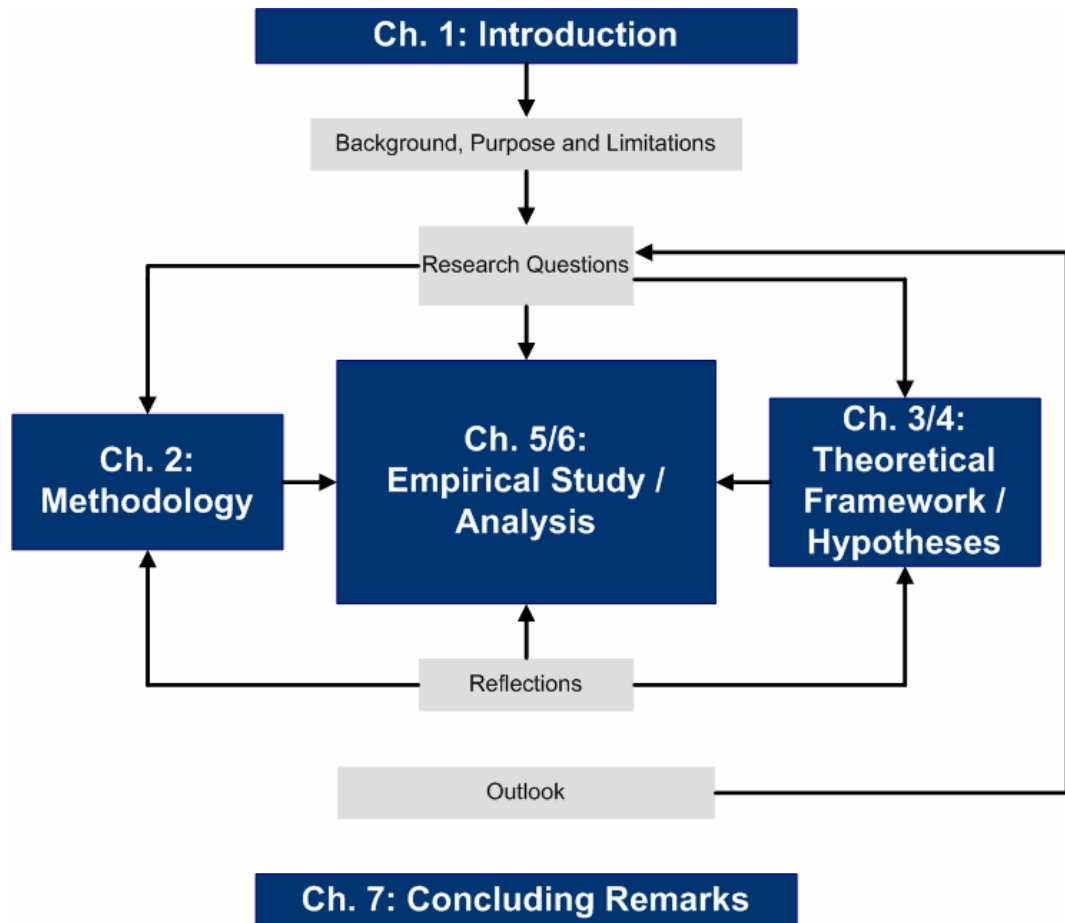


Figure 1-2: Outline



2 Methodology

Cooper and Schindler (2003, p. 14) point out that a good business research is aimed at providing useful and reliable results helping to improve the decision making process of a company's management. Apart from the managerial implications of business research every researcher has to be aware of the circumstances best described by the following quotation:

"...and of course the clear and certain truth no man has seen nor will there be anyone who knows about the gods and what I say about all things. For even if, in the best case, one happened to speak just of what has been brought to pass, still he himself would not know. But opinion is allotted to all."
(Xenophanes, 500 B.C.)²

2.1 Research Philosophy

With regard to the research philosophy three main alternatives can be identified, namely: positivism, realism and interpretivism (Saunders *et al.*, 2003, p. 83).

2.1.1 Predominant Philosophies

➤ Positivism

The positivistic way is closely related to the natural scientist's attitude, that is, to observe a particular phenomenon and eventually draw general law-like conclusions. The researcher finds him or herself within a rather objective position and is not involved in or affected by the research object as such. (Saunders *et al.*, 2003, pp. 83-84)

² online accessed 09/10/2005:
<http://www.seop.leeds.ac.uk/archives/win2002/entries/xenophanes/>



➤ **Interpretivism**

The interpretivist way can be considered the opposite of the positivistic view. It is characterised by the belief that finding general law-like principles is not essential. Interpretivist researchers are therefore trying to analyse and understand the reasoning that lies within the circumstances of a particular situation. (Saunders *et al.*, 2003, p. 84)

➤ **Realism**

The realistic way postulates that on the one hand one can distinguish between things people believe in and are affected by and on the other hand that a reality apart from this human perception exists. (Saunders *et al.*, 2003, pp. 84-85)

2.1.2 Our Research Philosophy

Our research philosophy is influenced by the positivistic philosophy. We tried to be as independent as possible while conducting our survey.

2.2 Research Approach

Two different ways of dealing with a theory can be identified – the inductive and deductive approach (Saunders *et al.*, 2003, p. 85).

2.2.1 Induction and Deduction

➤ **Induction**

When using the inductive approach the researcher's starting point is not a theory. Instead building a theory is the aim (Saunders *et al.*, 2003, p. 87). The researcher is aware of the problem and is going to investigate the phenomenon in order to gain a clear comprehension of the research context. Further understanding of the studied problem will derive from the empirical study. The



conclusions drawn will explain facts that have been studied in detail. Cooper and Schindler (2003, p. 37) point out that “... *the facts support the conclusion*”.

➤ **Deduction**

The deductive approach is mainly characterised by the fact that the researcher starts from an existing model or a theory which functions as a basis in order to develop a hypothesis which will help to explain causal relationships between different factors of influence. In a next step it is essential to conduct an empirical analysis in order to test the hypothesis (Saunders *et al.*, 2003, p. 86). Finally, logical conclusions have to appear. Cooper and Schindler (2003, p. 36) argue that “... *the conclusion must necessarily follow from the reasons given*”.

2.2.2 Our Research Approach

We have decided to apply a deductive research approach. We have analysed the theories available dealing with knowledge management and developed several hypotheses with regard to the strategic importance of KM in MNC's. The empirical study was used to enable us to answer our research questions and to determine whether our conclusions were valid.

2.3 Research Method

One can rely on qualitative and quantitative research methods which have been described by Holbert and Speece (1993, pp. 43-53) as “*The two roads*”, emphasising the differences between the two methods.

2.3.1 Qualitative Method

A qualitative research is conducted if data which cannot be quantified or put into numbers is collected, analysed and



interpreted. Case studies, interviews or a survey with very small sections are effective tools for qualitative research (Calder, 1996, p. 68; Saunders *et al.* 2003, p. 247).

2.3.2 Quantitative Method

Holbert and Speece (1993, p. 45) characterise the quantitative method as *hard* research and identify the sample survey as a powerful means of the quantitative approach. The quantitative research can also be defined as a method that “... seeks to quantify the data, and typically, applies some form of statistical analysis” (Malhotra, 1999, p. 148).

2.3.3 Our Research Method

We have chosen to apply a quantitative method when collecting the data needed. Thus we used a questionnaire. The purpose was to gain insight into the perception of a larger group of companies rather than the in-depth views of a small number of enterprises.

2.4 Method for Collecting Data

Two important types of data can be identified: secondary and primary data.

2.4.1 Secondary Data

Data that has already been collected is referred to as *secondary data* and can be mainly obtained from books, the internet and in magazines or articles. Depending on the source of this data one has to distinguish between *internal* and *external* secondary data. The internal data is stored within a company's archives. External data in turn is located somewhere outside the organisation (Paramasuran, 1991, p.85).



Holbert and Speece (1993, p. 89) emphasise secondary research coming before primary research which can also be called *desk research*. In addition it is important that the researcher is aware of the fact that the secondary data may not directly respond to the research problem, since the data was gathered for other purposes before.

2.4.2 Primary Data

In case material for a research is obtained entirely new it is called *primary data*. The researcher uses this kind of data in order to enhance and augment the assumptions and insights drawn from the secondary data. Lacks of primary data will likely result in a failure to achieve the research goal and answer the research questions reliably. Therefore it is essential to pay high attention to accuracy when collecting primary data, no matter if it is obtained by interviews, questionnaires or other means.

2.4.3 Our Data Collection

We have used both types of data throughout our research project. The secondary data review is essential for the theoretical framework we are going to present in the next chapter. This will provide the basis for the following analysis of the primary data. First and foremost we have used the libraries of Kristianstad University, Sweden and Anhalt University of Applied Sciences, Germany as well as the Internet and different magazines to get access to relevant secondary data. The primary data used for the empirical analysis was obtained by a questionnaire-based e-mail survey.

2.5 The Questionnaire

Chisnall (2005, p. 133) describes a questionnaire as a tool to obtain certain information about a problem that has been defined



in advance. After analysis and interpretation of the collected data the use of the questionnaire will eventually lead to a more precise and clear understanding and appreciation of the problem identified.

2.5.1 Requirements

Chisnall (2005, p. 133) emphasises that regardless the problem a questionnaire has to follow three basic principles, that is, the responder must be:

- able to understand the question
- able to provide the information asked for
- willing to provide the relevant information.

These general characteristics necessitate more specific requirements. It is important to use words that leave no tolerance for being misunderstood or where there is no doubt about the meaning/definition. In addition, a simple language should be used, that is, uncommon words or foreign words that complicate the understanding have to be eliminated (Saunders *et al.*, 2003, pp. 298-300). Scharmbacher (2002, p. 25) explicitly warns that the questionnaire should not be perceived as annoying.

Furthermore all questions asked must be directly related to the phenomenon which is studied. Therefore a question should be as short as possible and of low complexity. In such cases it would be advisable to create three plain and clear questions instead of only one complex one (Saunders *et al.*, 2003, p. 299). Paramasuran (1991, p. 170) calls those differences *disguised* and *non-*



disguised.³ Another pre-requisite for a good questionnaire is to prevent prejudices, that is, the questions have to be free of any suggestion which answer will be more suitable than others (Saunders *et al.*, 2003, pp. 299-300; Chisnall, 2005, pp. 139-141).

The validity and applicability is enhanced as long as the questionnaire is kept as short as possible (Scharmbacher, 2002, p. 26). This fact is closely related to Scharmbacher's warning that a too extended questionnaire might be seen as troublesome which will eventually negatively affect the quality of the results. Before conducting the research and sending out the questionnaires it is necessary to run a pilot test, that is, to ensure that the questionnaire is checked in advance (Saunders *et al.*, 2003, pp. 308-309)

2.5.2 Structure

Attention has also been paid to the structure and layout of the questionnaire as such, that is, a researcher has to choose between two generic ways of structuring the questionnaire (Saunders *et al.*, 2003, pp. 302-305). One way is to begin with general or unrestricted questions and then to continue with more specific and detailed ones.

Applying the opposite method implies to start with specific questions and then widen the horizon of aspects. The so-called filter questions are a helpful tool to avoid a waste of time on questions that are more specific and related to a general question

³ Non-disguised questions are direct questions where the intention is obvious, disguised questions are indirect where the purpose is not noticeable for the respondent



which has been answered negatively before⁴ (Saunders *et al.*, 2003, p. 302). Classification questions should be positioned at the end of the questionnaire – except one is looking only for a special target group. In addition, the researcher has to decide whether to use open-ended or closed questions (Scharmbacher, 2002, p. 29).

2.6 Measurement

In order to evaluate the measurement tool three aspects have to be looked at in more detail: validity, reliability and practicality (Cooper & Schindler, 2003, 231-240).

2.6.1 Validity

Validity deals with the question whether the researcher was able to ensure that the intention of his study was measured. It has to be asked whether the research is free of coincidence and systematic errors and if the outcome corresponds to the reality. Since it is impossible to guarantee a 100% security of the results the researcher's activities are aimed to achieve a degree of validity as high as possible. It is also of interest to what extent the findings are applicable to other situations and therefore may have general relevance (Cooper & Schindler, 2003, pp. 231-236).

2.6.2 Reliability

The term reliability is used in order to describe the consistency of the method, that is, to assess the precision of the measurement procedure. In order to determine the degree of reliability one can ask three questions (Saunders *et al.*, 2003, p. 101):

- Can the result be achieved again?
- Can different investigators obtain similar results?

⁴ e.g.: Do you smoke? NO – there is no further need to ask about the kind of tobacco



- Is the interpretation of the data transparent and free of random and unstable errors?

Assuming that the scoring of various observers is not very different from each other and the other two questions can be answered positively the reliability can be regarded as high.

2.6.3 Practicality

Cooper and Schindler (2003, p. 240) emphasise the need to be aware of another important factor – the practicality. According to them it is important also to deal with the research from an economic point of view, that is, the instruments must be affordable. This refers to cost-value ratio which eventually leads to a trade-off when conducting a research of any kind. In addition they mention the straightforwardness of the research calling it *'convenient'*.

2.6.4 Validity, Reliability and Practicality of Our Paper

Achieving reliability and validity does require hard work. The aim of the study was to pinpoint and identify critical factors of KM and the level of importance of that factor. The quantitative method used for the study has provided substantial information on this question. The validity has been additionally increased by representing our results as thoroughly, correctly and extensively as possible. Therefore we regard the validity as high.

Nevertheless, the study could have been exposed to biases on various levels. At first it must be considered that the respondents may have expressed their subjective opinion. Although a pilot test of the questionnaire was run prior to the data collection process possibilities for misunderstandings may



not have been avoided completely. Despite these limitations we are confident that conducting this research again with the same parameters would produce similar results. Even another research team would probably obtain comparable data. Since we have used objective and widely-accepted statistical tools the transparency of the analysis and interpretation process can be regarded as high. In addition, we consider our secondary sources to be very reliable. We have tried to obtain more than one opinion on every theoretical part we have discussed. Therefore we consider the level of reliability as high.

With regard to the practicality of our research we had to agree on a trade-off between economic and time constraints. Even people who have not been directly involved in the research process should be able to understand the underlying rationale of this study and the assumptions drawn from its results. Thus, under the given circumstances, the level of practicality can be regarded as high. Figure 2-1 summarises the assessment of all three criterion.

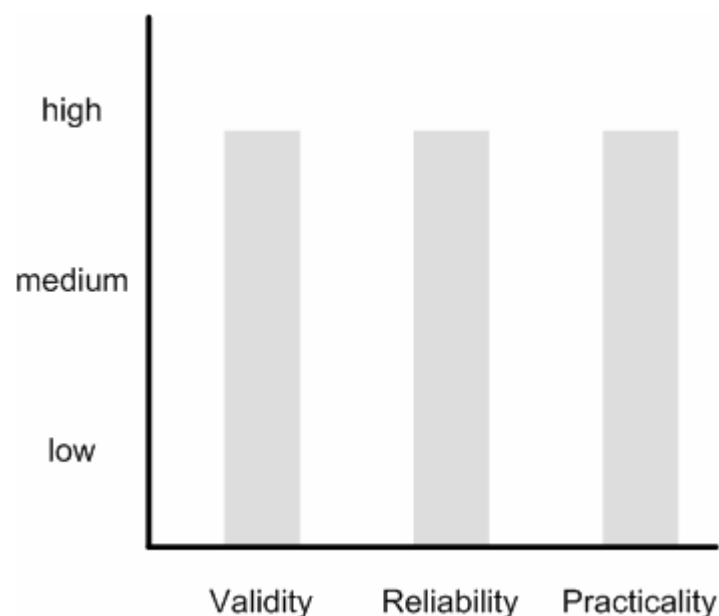




Figure 2-1: Validity, Reliability and Practicality

2.7 Obstacles and Constraints Associated with Research

Conducting research is a very demanding task. The introductory citation is used exemplary to demonstrate that no one owns the philosopher's stone. Guckelsberger and Unger (1999) claim that conclusions drawn from a research or survey contain the possibility of errors – they are inevitable. Every research is based on specific insights and basic assumptions that may be true or false. Theory and hypotheses are trying to avoid errors but it is impossible to do so. But on the other hand, one cannot conduct research without assumptions. We are part of a vicious circle. All our theoretical and practical knowledge is merely a system of more or less reliable suppositions (Guckelsberger & Unger, 1999).

Therefore we tried to be as thorough as possible in our research process and followed suggestions made by Holbert and Speece (1993, p. 27) and Parasumaran (1991) to be aware of typical mistakes and to minimise the potential risk of failure. They all emphasised that a clear and precise strategy is essential, including a thorough problem definition as well as the setting of priorities with regard to the researcher's information needs and the sources and the tools appropriate for the research.



3 Theoretical Framework

3.1 Introduction

The theoretical framework is of great importance. When talking about global business and knowledge management it is necessary to set up a framework in order to avoid misunderstandings and irritations. Therefore we will start the discussion by introducing the Intellectual and Human Capital concept, which can be regarded as the conceptual roots of KM. Based on this foundation we will narrow down the scope of the debate and provide an elaboration and definitions of the most important knowledge management related aspects although the variety of given definitions and different models makes it difficult to provide one ultimate framework.

Finally we are going to present a background discussion of international business in order to demonstrate the complexity of KM, globalisation and other parameters belonging to it. At the end, this overview shall function as our conceptual and theoretical guideline which we will rely on when we are going to develop our hypotheses.

3.2 Intellectual Capital

The increasing importance of intangible assets within business areas has led to an emergence of attempts (e.g.: Roos *et al.* 1997; Edvinsson & Malone, 1997; Brooking, 1999; Stewart, 1997) aimed to identify the components, which traditionally have been labelled as goodwill (Brooking, 1999, p. 11). The generic term Intellectual Capital was widely used as a synonym⁵ for intangible assets in order to address these different value drivers.

⁵ Although other notations, like Intellectual Property, were alternatively used.



Nevertheless some authors questioned the usefulness and necessity of finding new words for intangible assets and its components (Upton, jr., 2003, p. 472).

➤ **Characteristics of Intellectual Capital**

Although the IC concept has been discussed at length, no generally accepted definition has reached a level of binding character (Petty & Guthrie, 2000, p. 158). In order to clarify the importance of IC as the starting point for the KM discipline the following paragraphs will create an aggregated form, based on the similarities of these concepts.

All frameworks were trying to name, identify, and coordinate the sources of value, the hidden power of competitive advantage and the reason for the stock market valuation gap (Edvinsson, 2002, p. 21). In other words, there was a quest for insight into the organisation's assets and procedures which cannot be seen at first glance but having great impact on the results of business transactions of all kinds (Roos *et al.*, 1997, p. 30).

With the classification process two major objectives were to be achieved. First, the researchers wanted to provide appliances for the companies to manage their IC properly and gain new insight into the entire problem and the components associated with IC. Three main characteristics for these tools are predominant (van der Meer-Kooistra & Zijlstra, 2001, p. 460):

- a management perspective on the topic
- an explicit relation to strategy and company objectives



- the Balanced Scorecard⁶ as the conceptual bedrock

Along with these findings it was also important to satisfy the information needs and demands of the other internal and external stakeholders. Therefore the tool of IC reports was emphasised and advocated (Arvidsson, 2003, p. 43; Blair & Wallman, 2003, p. 453). This development in the perception of intangible assets and their importance for corporate success has pioneered the emergence and acceptance of knowledge management, which will be discussed later in more detail.

➤ Definition

To sum up, one can conclude that IC can be defined in terms of the following equation (Edvinsson & Malone, 1997, p. 45):

"Human Capital + Structural Capital = Intellectual Capital"

3.3 The Importance of Human Capital

Human Capital as the main component of IC can be regarded as a main pillar which the KM concept relies on. Therefore it is essential to discuss briefly the main characteristics of Human Capital in this context.

➤ Definition

"Human Capital is defined, in a very simple way, as the knowledge that the employees take with them when they leave the firm at the end of the day." (Sánchez et al., 2000, p. 320)

⁶ *"The Balanced Scorecard ... provides the framework for a strategic measurement and management system. ... The scorecard measures organizational performance across four balanced perspectives: financial, customers, internal business processes, and learning and growth. The BSC enables companies to track financial results while simultaneously monitoring progress in building the capabilities and acquiring the intangible assets they need for future growth."* Kaplan & Norton, 1996, p. 2



Therefore one can conclude that the notion Human Capital comprises the workers' knowledge, experience and motivation (Günther & Neumann, 2004, p. 362; Brooking, 1999, p. 15).

It is not only the personal competence and capability of each individual but especially the potential for innovative and effective work that derives from these characteristics (Schütte, 2004, p. 175). In the ever increasing competitive environment in a globalised business world it is the workforce which is the main differentiator – the decisive strategic factor – for the firms (Bernatzeder & Schütte, 2005, p. 164; van der Meer-Kooistra & Zijlstra, 2001, p. 461).

Furthermore, Human Capital possesses a special attribute; the more it is used the more valuable it becomes for the individual as well as for the company (Maul & Menninger, 2000, p. 530; Edvinsson, 2002, p. 54). This creates a situation which can be described as a reciprocal interchange of values in order to increase the overall utility of the HC and create mutual benefits for both parties involved (Davenport, 1999, p. 15).

Another unique feature is the fact that it is impossible to disassociate the persons from their knowledge, skills and so forth (Becker, 1993, p. 16). They rather constitute one object, which – compared to machines or patents – cannot be owned or controlled by the enterprise (Flamholtz, 1999, p. 160, Aldisert, 2002, p. 7).

3.4 Knowledge Management

In order to manage something you must be able to recognise it. Because of the importance of knowledge and its great impact on



Human Capital and corporate success the concept of knowledge management as an integral part of the overall business strategy shall be looked at more closely. It is paramount to understand the underlying rationale and the connections within the concept in order to be able to create and facilitate the emergence of a knowledge friendly environment within MNC's.

Therefore – after providing a working definition – the following paragraphs will describe the main KM components and related issues in more detail.

➤ **Definition**

Kalling and Styhre (2003, p. 27) define KM in general as a concept which

"... represents a particular perspective on organizations, a perspective emphasizing intangible intellectual resources as the prime mover of organizational performance, competitive advantage, and managerial practice" and "... emphasizes the firm's internal resources and assets".

Beckman (1999, p. 1-6) lists several other definitions given by some of the most influential scholars working in the field of KM. Although they approach the concept of KM with a different scope and level of precision the central idea is always related to the question of knowledge and its effective application within the day-to-day business for the good of the company. Therefore, it can be clarified from the beginning that the aim of a company must be to foster an environment with emphasis on sharing knowledge (Prahalad & Ramaswamy, 2004, pp. 175-184) resulting in economic exploitation of some kind.



3.4.1 The Nature of Knowledge

Discussing knowledge management requires a clarification and definition of the phenomenon *knowledge*.

➤ Definition

Davenport and Prusak (1998, p. 5) define knowledge as

"... a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. ..."

Based on this definition an even closer look at the different features of knowledge mentioned is warranted. First, knowledge can be distinguished into tacit and explicit forms (Nonaka *et al.*, 2001, p. 15).

➤ Tacit Knowledge

Tacit knowledge comprises all the expertise which a person possesses but which cannot easily be articulated or made understandable (Stewart, 1997, p. 123; Davenport, 1999, p. 149; Haldin-Herrgard, 2000, p. 358; Brooking, 1999, p. 51; Davenport & Prusak, 1998, pp. 70-72). Since it is hidden in the brains it can neither be subject to any lecture nor be found in manuals, books or in any electronic storage device (Haldin-Herrgard, 2000, p. 359).

The fact that tacit knowledge can only be processed by its owner constitutes a great problem and the main objective of all KM activities: the dissemination. Therefore it is of high importance for the company to facilitate the process of coding and sharing this special kind of knowledge (Haldin-Herrgard, 2000, p. 359). A



successful dissemination will lead to the creation of explicit knowledge.

➤ **Explicit Knowledge**

Opposed to tacit knowledge, explicit knowledge can be found in various kinds of documents and is accessible and utilisable for everybody (Brooking, 1999, p. 51; Davenport, 1999, p. 149, Stewart, p. 124; Haldin-Herrgard, 2000, p. 359). Once tacit knowledge has been transformed and codified into explicit knowledge, it contributes to the results of the company to a great extent (Roos *et al.*, 1997, p. 33).

Figure 3-1 shows the correlation and interdependence between tacit and explicit knowledge and indicates the strategic focus of all corporate KM initiatives.⁷

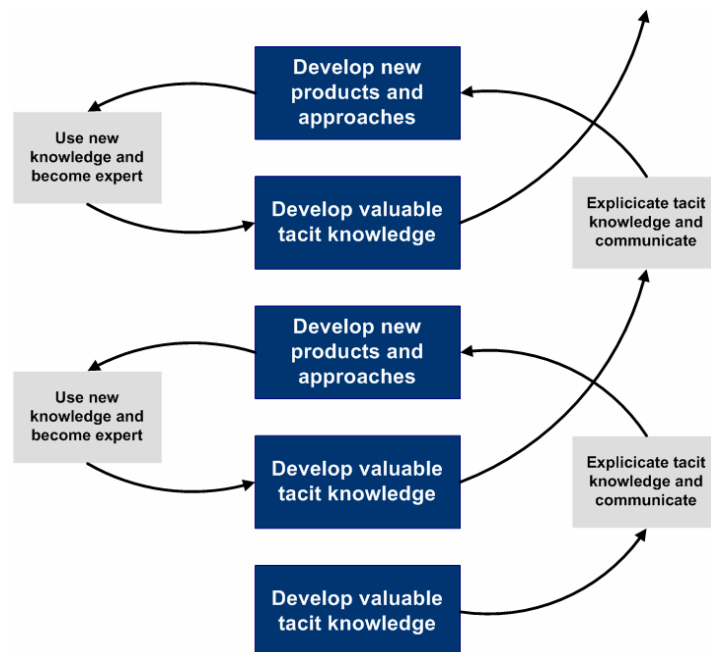


Figure 3-1: The Knowledge Spiral

(Source: Adapted from: Brooking, 1999, p. 151)

⁷ A similar depiction has been made by Nonaka et al., but from a more general point of view, cp: Nonaka et al., 2001, p. 15



Ideally, the accumulation process goes on continually and includes all members of the staff. Training, additional vocational education, research and development and exchange of experiences are only a few ways to keep the spiral circulating (Brooking, 1999, pp. 143-152, 167-169; Becker, 1993, pp. 17, 29-54). Brooking (1999, p. 149) advocates the installation of "...a *corporate memory*".

Likewise a "... *knowledge marketplace*" has been suggested (Davenport & Prusak, 1997, p. 160). Regardless of the denomination of such knowledge repository; it will emerge and grow over time and thereby contribute positively to the successful application of knowledge (Prahalad & Ramaswamy, 2004, p. 171; Edvinsson, 2002, p. 129).

➤ **Special Attributes of Knowledge**

Since knowledge does not disappear or wear out by use it can be regarded as an unlimited resource that grows steadily and thereby enhances its original value (Sveiby, 1997, pp. 22-23; Edvinsson, 2002, p. 56). Furthermore the recurrent application of knowledge yields lasting benefits for the company as well as for the employees (Davenport & Prusak, 1998, p. 17) Thus, from a KM perspective the objective has to be to create as much explicit knowledge as possible (Brooking, 1999, pp. 149-150; Davenport & Prusak, 1997, pp. 68-72, 156-157).

It is also important not to confuse knowledge with data and information (Nonaka *et al.*, 2001, p. 14; Teece, 2001, pp. 129; Sveiby, 1997, p. 24; Brooking, 1999, p. 143; Skovvang Christensen & Bukh, 2005, pp. 17-19). Data and information are merely the 'raw-material' or input for the intellectual work. Figure



3-2 shows a hierarchy with different levels before knowledge is created.

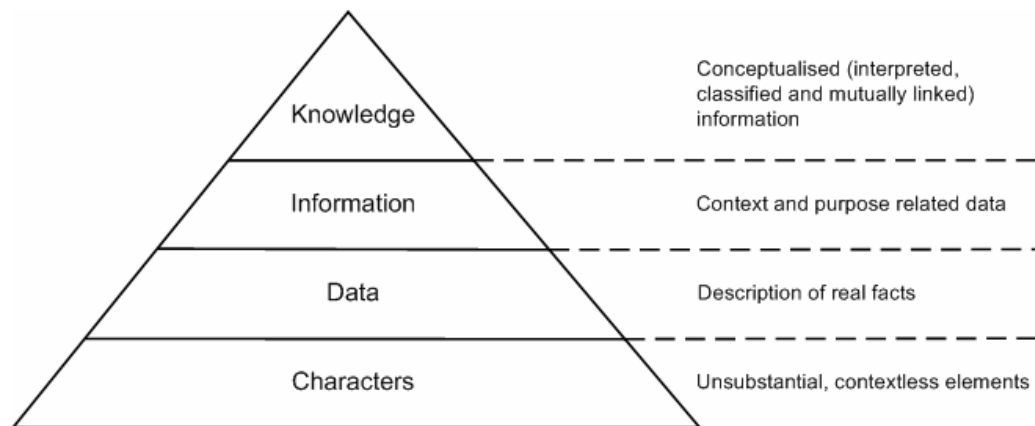


Figure 3-2: Knowledge Hierarchy

(Adapted from Gehle & Mülder, 2001, p. 20)

Gehle and Mülder (2001, p. 19) point out that all kinds of characters, e.g. a letter, belong to the first layer of this hierarchy. Whereas data is explained as character strings showing coherence but no sign for its application, information is a character band with relevance and content. According to Davenport and Prusak (1998, p.4) this value-adding process is a result of contextualisation, categorisation, calculation, corrections and/or summarisation of different data. Finally, knowledge is obtained as the result of a multi-dimensional and structured application of the other variables. Davenport and Prusak (1998, p. 6) add that this transformation process is characterised by:

- *comparison* → with previous situations and knowledge
- *consequences* → implications for decision-making
- *connections* → degree of relation to other existing knowledge
- *conversation* → other people's appraisal of the new knowledge



Other authors provide a somewhat different categorisation. Some exclude the first layer and emphasise only the three remaining stages data, information and knowledge (Davenport & Prusak, 1997, p.9) while again others switch the first level to the top and name it wisdom instead (Beckman, 1999, p. 1-5; Saint-Onge, 1999, pp. 224-225) or extend the Davenport & Prusak model by specifically addressing expertise and capability as the last two stages (Beckmann, 1999, p. 1-5).

3.4.2 Knowledge in a Corporate Context

With regard to its various dimensions the knowledge of the employees can be categorised as it is suggested by the ASHEN – model⁸ shown in figure 3-3. The elements are addressing the tacit/explicit state and can be regarded as the main parameters knowledge management has to deal with.

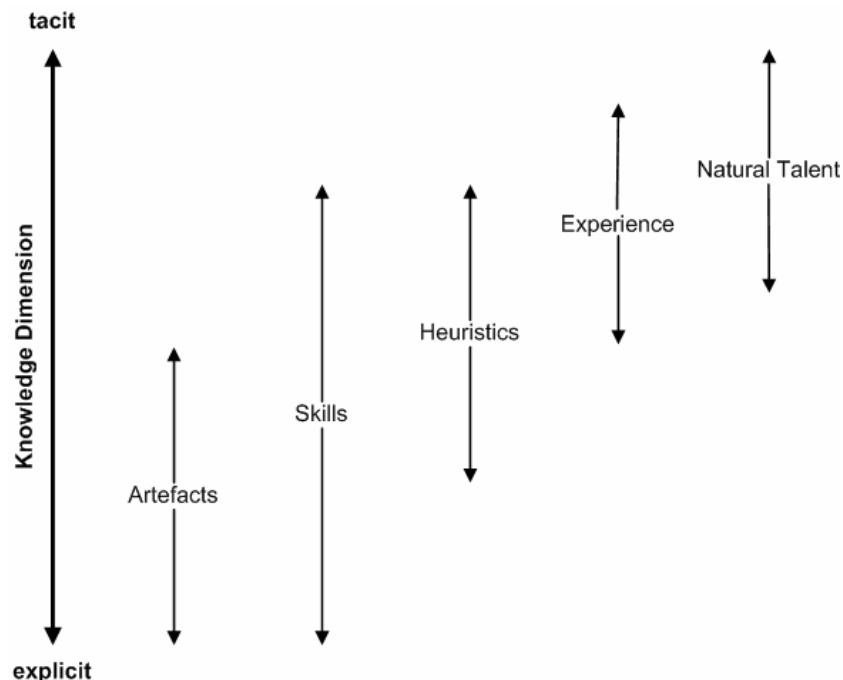


Figure 3-3: The ASHEN – Model

(Source: Adapted from Schütt, 2000, p. 80)

⁸ The model was proposed by David Snowden and in German literature it is called "HANSE – Model"



Artefacts comprise all elements of the explicit knowledge, e.g. databases and manuals (Schütt, 2000, p. 86). The term skills encompasses both explicit and tacit elements of knowledge. They are easy to document and existing deficits can be identified without problems (Schütt, 2000, p. 89). Skills can also be described as the physical and mental ability of a person, e.g. sleight of hand or power of comprehension (Roos *et al.*, 1997, p. 36; Davenport, 1999, p. 19; Brooking, 1999, pp. 46-47). Heuristics instead are best characterised as rule of thumb which is sometimes not written out and made explicit (Schütte, 2000, p. 85).

Experience can be regarded as one of the most important parts of tacit knowledge (Schütt, 2000, p. 90). Sveiby (1997, pp. 37-38) describes it as a by-product of everyday work and emphasises the positive effects on the overall quality of work and the additional value created for the company as well as the increases in the individual level of expertise. Natural talent is a capability which cannot be developed – either a person possesses a certain talent or not. However, the effectiveness of its use can be improved by training. Talent can be regarded as a natural quality or giftedness (Davenport, 1999, p.20).

The characteristics of these five manifestations of knowledge lead to the conclusion that knowledge as such cannot be managed – instead knowledge management must be focused on creating an ambience where knowledge in all forms can unfold itself (Schütt, 2000, p. 73). In this context one also has to look at the knowledge base within the company. Gehle and Mülder (2001) provide a generic layer model which exemplifies five different levels and is shown in figure 3-4.

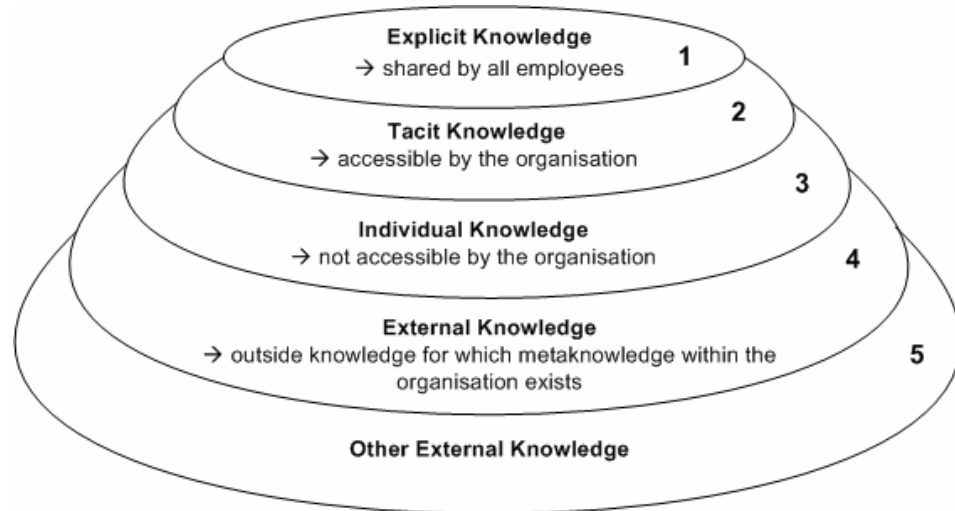


Figure 3-4: Layer Model of Organisational Knowledge Base

(Source: In translation of Gehle & Mülder, 2001, p. 22)

Using this model they try to visualise the various forms of knowledge which a company is confronted with simultaneously (Gehle & Mülder, 2001, p. 21). Hereby the previously introduced knowledge spiral is enhanced and further specified. Apart from tacit and explicit knowledge another important form has to be considered – the collective knowledge of the company.

The notion collective knowledge describes additional information, rules of conduct and organisational principles that have emerged in the course of time (Gehle & Mülder, 2001, p. 22). Brooking (1999, p. 52) refers to this category as implicit knowledge and defines it as *"... knowledge which is hidden in the operating procedures, methods and even the corporate culture."*

In this regard companies considering to implement and execute a successful KM-strategy have to be aware of the importance of organisational norms, values and beliefs. These are the main input variables that foster the corporate culture. Since the



persons dealing with the data and information available will be influenced by the conditions described also the results of their knowledge work will reflect the existing moral concepts (Davenport & Prusak, 1998, p. 12; Schütt, 2001, p. 43).

The term meta-knowledge mentioned in the fourth layer is used to describe the knowledge of a person that is well informed about other people's knowledge and expertise and where to find a particular fraction of knowledge within the various corporate knowledge repositories. This kind of knowledge is continually gaining importance, especially in large and highly diversified companies (Schütt, 2001, p. 49).

3.4.3 The KM Challenge

Based on the previously identified characteristics and elements of KM and knowledge in particular it is now possible to specify important stages of a generic KM process. Figure 3-5 illustrates eight operational and managerial parameters that have to be considered.

The entire process starts with an articulation and communication of knowledge objectives in an understandable manner. Once the knowledge needed has been identified it has either to be acquired from an external source or developed internally. In the next step the knowledge has to be shared and transferred among the colleagues, allowing for unrestricted and ideally real-time access. At this crucial stage the tacit dimension has to be abandoned and the knowledge must become explicit. After a successful dissemination the knowledge will be applied and used to solve problems and create value and eventually competitive advantage.

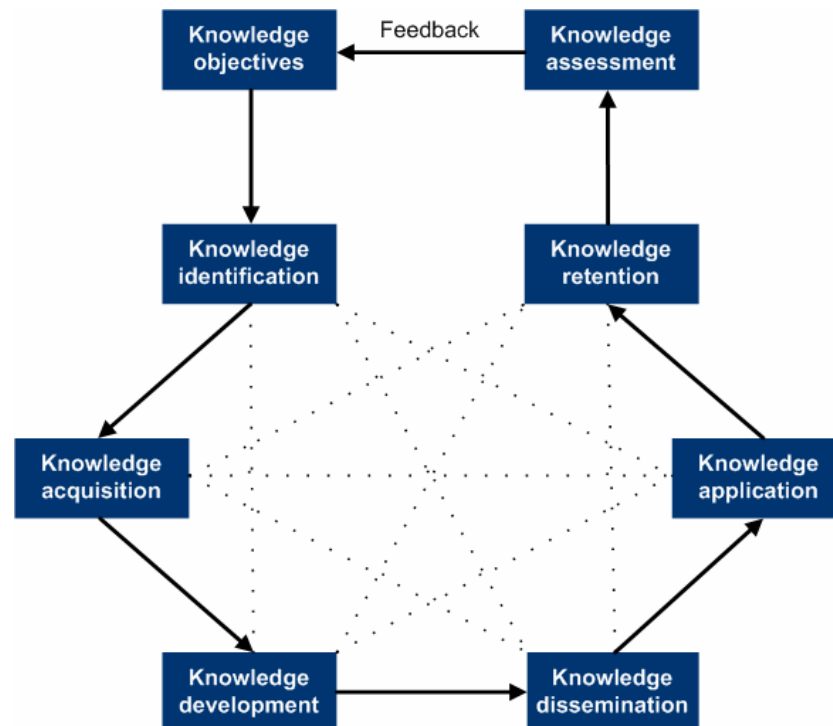


Figure 3-5: KM Modules

(Source: Adapted from Gehle & Mülder, 2001, p.25)

When the knowledge applied has proved to be useful for the purpose of the company it has to be stored and kept available for further application sometime in the future when similar situations emerge and this kind of knowledge is required again. The entire corporate knowledge repositories have to be assessed and updated on a regular basis. The loose connections between the six modules shown in the lower part of figure 3-5 indicated by the dotted lines, emphasise that one or more steps can be leapfrogged at any time (Gehle & Mülder, 2001, pp. 24-25).

Considering the competitive pressure nowadays and the limited time for decisions available this option seems to be advisable. In addition, this process has to be repeated constantly and adjustments must be possible at any time.



3.5 Barriers and Hazards Associated with KM

A thorough examination of the KM concept requires also addressing critical aspects and difficulties. With regard to the previously discussed determinants and characteristics of KM and knowledge the focus is especially on managerial and organisational as well as on knowledge related problems, which shall be briefly discussed in the following paragraphs.

➤ **Lack of Strategic Alignment and Corporate Commitment**

In order to create and sustain competitive advantage it is important that all KM projects are being anchored within the corporate strategy. The word strategy derives from the Greek 'strategos' and means literally 'military leader' (Wikipedia, 2005)⁹ but is also often referred to as the 'art of warfare' (Kalling & Styhre, 2003, p. 29) which can be used in a figurative sense to describe the contemporary business environment. Kalling and Styhre (2003, p. 29) consider strategy as "*... the umbrella under which to discuss knowledge management*". Robson (1997, pp. 6-41) provides a more detailed elaboration of strategy and its components, emphasising different approaches and functions.

In an environment of constant challenges, risks and opportunities it has become important for the companies to navigate safely and with industry foresight. Taking an active rather than a passive role in this process requires a symbiosis of both the organisation and its employees as the acting participants in all KM campaigns. Therefore one has to consider strategy as the blueprint and basic formula for future corporate development and core competence

⁹ online accessed 12/10/2005: <http://en.wikipedia.org/wiki/Strategy>



as the roots of the company (Hamel & Prahalad, 1996, pp. 163-193).

In this context both elements function as an indirect but ubiquitous success factor of KM – requiring a high degree of appreciation and commitment. Only with a clear understanding of the company's goals and with an aligned strategy one can leverage the benefits of the combined resources knowledge and core competence in order to create competitive advantages (Hamel & Prahalad, 1996, pp. 163-193). At this point the prominence of the previously mentioned Human Capital concept becomes apparent since the employees are the facilitators for creating, applying and exploiting knowledge in order to generate solutions for the company.

Therefore the commitment to *KM and HC* oriented management must be communicated throughout the organisation in a clear and unmistakable manner emphasising the interdependence of both management objects. If the company fails to integrate all factors properly when creating this strategic alignment and to communicate the commitment towards KM, the risks will become apparent on an operational level (Bernatzeder & Schütte, 2005, p. 165; Hamel & Prahalad, 1990, pp. 79-91).

With regard to the effectiveness of KM it is also important to advise against the attitude of valuing people only according to their compensation (Brooking, 1999, pp. 184-185; Aldisert, 2002, p. 18, 20). Since the employees with their knowledge and expertise take a central position in the business of the 21st century such a superficial behaviour will probably result in short-term thinking and likely end in the suspension of staff of high



utility for the company (Bukowitz & Williams, 1999, pp. 339-342; Davenport & Prusak, 1998, p. 44). This, however, could degrade future value and eventually jeopardise the company's competitiveness (Pfeffer, 1998, pp. 22-28, 292).

➤ **Information Abundance**

Another potential risk can be described as information overload, that is, the continual increase in the amount of available information. These days it is increasingly difficult to manage this input (Sena & Shani, 1999, p. 8-2; Foy, 1999, p. 15-3; Bukowitz & Williams, 1999, p. 36, 50). In order to alleviate or prevent negative effects a company needs highly qualified knowledge workers handling this task. This encompasses the employee's ability to apply appropriate filter techniques as well as analysing and manipulating methods as tools for rendering collected data and given information into meaningful and profitable outcomes. Again, the mutual dependency of KM and HC can be seen at first glance.

➤ **Out-of-Date**

But not only is the sheer amount of information alarming. Likewise old and therefore useless information, knowledge and antiquated skills, have to be considered a barrier (Bukowitz & Williams, 1999, pp. 76, 174, 322-325; Edvinsson, 2002, p. 56). This perception leads to the conclusion that the previously mentioned corporate memory has to be cleaned from time to time and updated constantly. This in turn necessitates a special attribute in a time of individual life-long learning and the learning organisation, that is, both company and employees have to develop the ability to forget (Lyles & Dhanaraj, 2004, pp. 92-93; Hunt, 2003, p. 102). Otherwise the out-of-date problem can



advance over time and constitute a severe threat to the enterprise.

➤ **NIH-Syndrome**

With regard to knowledge management Kalling and Styhre (2003, p. 77) describe the 'Not-invented-here' mentality which is closely related to the above mentioned threat as a "... *tyranny of the SBU*" (Strategic Business Unit). Thereby they address the resentment to provide and allow access to knowledge because of the split-up of the company. Thus, a process of knowledge monopolisation is triggered and anxiety for giving away knowledge to divisional outsiders can be the result (Kalling & Styhre, 2003, p. 78).

Additionally the impacts of NIH can often be noticed in situations of change by virtue of merger and acquisition activities or structural modifications of a company or even an entire industry (Aldisert, 2002, p. 19; Senge *et al.*, 1999, p. 417). Consequently, reluctance – or at least a delay – to accept other circumstances and adapt new ways of doing business or use external knowledge may occur and negatively affect the company (Brooking, 1999, p. 154-155; Foy, 1999, p. 15-5; Roberts, 2004, p. 66). Therefore it is essential to create and strengthen an atmosphere of tolerance and openness emphasising knowledge sharing, new ideas and technologies (Prahalad & Ramaswamy, 2004, p. 186-190; Edvinsson, 2002, p.128).

➤ **Cultural Differences**

Especially MNC's are characterised by a workforce which comprises a great variety of different nationalities. Such a multi-national structure can help to enhance the effectiveness of doing business on a global scale (Edvinsson & Malone, 1997, p. 136).



Nevertheless, often problems arise due to cultural and national distinctness and have to be dealt with accordingly (Deresky, 2003, p. 354). In this respect Hofstede (1994, p. 21) emphasises the great impacts of values and beliefs on the culture.¹⁰

Thereby one has not only to consider differences in culture on a society level but also cultural differences within companies and managerial styles. Schneider and Barsoux (2003, pp. 51-77) focus on this topic and conclude that such problems derive also from differences between the individual subcultures – e.g. professional and functional culture (engineers and sales representatives). As a result thereof competition between the two different corporate cultures and hidden hurdles might emerge. This may deliberately support the NIH mentality and lead to anxiety, distrust, anger, fear, misunderstandings, lack of directing, defensiveness and consequently to further problems.

3.6 KM Principles and Key Success Factors

Since it is difficult to successfully manage all aspects of knowledge management simultaneously, MNC's should concentrate on the crucial factors considered most important in a particular situation, e.g. KM implementation processes, knowledge creation and knowledge transfer. Based on academic discussions and practical examples (see Appendix A) the following paragraphs will provide a detailed elaboration of KM principles and success factors.

¹⁰ Between 1967 and 1973, Hofstede carried out one of the most famous research projects about business cultures. He had 116.000 questionnaires sent to IBM – offices in 66 countries all over the world. They contained questions about work related values. After analysing the results a four-dimensional framework was constructed. The four dimensions are called: *Power Distance*; *Uncertainty Avoidance*; *Individualism* and *Masculinity*.



Davenport and Prusak (1998, pp.153-161) have identified nine factors leading to knowledge project success:

- *A knowledge-oriented culture.*

This means that the organisation should concentrate on creating and maintaining an atmosphere facilitating knowledge sharing at all levels within the company.

- *Technical and organizational infrastructure.*

The company has to provide adequate equipment and infrastructure in order to enable its employees to identify, transfer and share the knowledge effectively in the organisation. It is one motivation of the success of the knowledge management.

- *Senior management support.*

It is important to get support from the corporate leaders for knowledge management. This will help to spread the concept of knowledge management in the organisation and remove barriers of KM.

- *A link to economics or industry value.*

One objective for promoting KM is to reduce costs and be profitable; however it is difficult to measure the value of knowledge since there are no specific parameters for its measurement. If it is possible to show up the money saved or earned by managing knowledge on the balance sheet, or reflect the effect of knowledge management "*through process measures, like cycle time, customer satisfaction*", it will strengthen peoples' confidence in managing it (Davenport & Prusak, 1998, p.157).

- *A modicum of process orientation*



It is difficult for the corporation to describe the detailed steps in the knowledge management. Though some corporation has done this, few of them have actually implemented them according to the designed process.

- *Clarity of vision and language.*

Individuals have different opinions on the corporation's target and have different mother tongues, especially in the MNC's, so it is crucial to clarify the target and the official language in managing knowledge in the organisation.

- *Nontrivial motivational aids.*

The organisation should provide nontrivial motivational aids for the employee to create share and utilise knowledge. As an effective instrument, the organisation can link KM activities to the employees' evaluation and compensation system.

- *Some level of knowledge structure.*

To manage knowledge effectively, the organisation should construct several levels of KM. It is helpful for transforming tacit knowledge into explicit knowledge.

- *Multiple channels for knowledge transfer.*

Knowledge transfer is one of the most important processes of KM. For the dissemination of knowledge both formal and informal channels can be relied on. These various forms make it easier for the employees to get useful knowledge from other colleagues in the organisation.

Apart from Davenport and Prusak, the American Productivity Quality Centre (APQC, 2000, www.apqc.org) has also presented



key factors promoting the implementation of KM successfully, including:

- leadership;
- culture;
- structure, roles and responsibilities;
- technology (IT);
- measurement.

Leadership plays a key role in the organisation and is used to describe the ability of the top-management to ensure successful performance of an organisation. Leadership is expressed by actions influencing the behaviours of the employees in a certain way. *Culture* is based on the corporate history, the stockholders' expectations and some unwritten rules guiding and influencing the attitude and behaviour of the employees significantly.

Structure, Roles and Responsibilities are important KM components. In this context, structure represents the corporate design to establish responsibility and accountability according to the different business strategies. Meanwhile, the HR managers play different roles in cross-functional teams facilitating a positive attitude towards knowledge sharing within the organisation. Sophisticated *IT* enables the company to benefit from an existing KM-friendly behaviour of its employees, e.g. acquiring, managing and delivering relevant information without delays.

In order to be successful, it is essential to match the KM system with individual KM objectives. Therefore a correlation between the



KM activities and the business outcome must be established. Apart from defining the pure cause-and-effect relationship as such a company has to explain its KM *measurement* policy.

*"You don't have the time to make all mistakes yourself.
Learn from the other's"*

This quotation (cited in Helgesson, 1996, p. 94) can be used as a maxim when discussing general KM principles. Although all potential risks previously identified can have negative effects on the successful implementation of KM activities, it is important to point out that these parameters can be actively managed and influenced by the company. Such a proactive approach will create a climate for mutual partnership within the organisation.

In this context Prahalad and Ramaswamy (2004, p. 191-193) address specifically some KM principles which they called the *"Seven Layers of a Knowledge Environment"*. According to them a company should focus on:

- *Training and Development;*
- *Information Sharing;*
- *Using Information;*
- *Leveraging Sources of Competence;*
- *Mobilizing Action Teams;*
- *Facilitating Discovery;*
- *Co-creating Value*



Key Success Factors of Knowledge Management in MNC's.

3 Theoretical Framework

3.6 KM Principles and Key Success Factors



Beckman (1999, pp. 1-6 – 1-7)¹¹ emphasises that any KM activity will require a certain amount of money. Furthermore the personal component on every corporate level is highlighted and it can be regarded as a decisive factor for the success of KM. Finally it can be concluded that KM is not a one-time event. On the contrary, the entire KM policy has to be reviewed and if necessary revised on a regular basis.

3.7 Globalisation

On the brief introductory description of the contemporary business environment figure 3-6 addresses the parameters that are important in this respect.

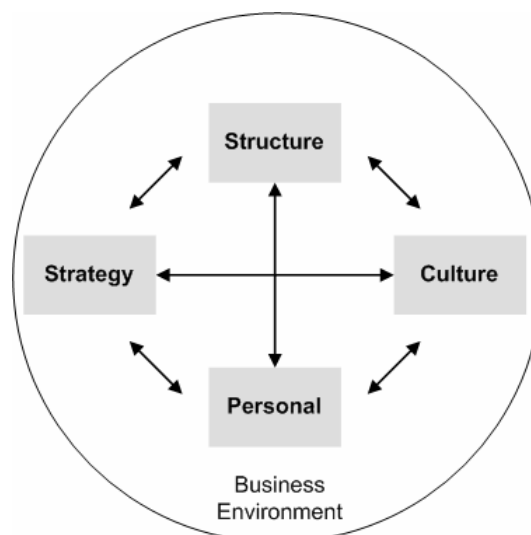


Figure 3-6: Organisational Challenges

(Source: Translated after: Kriekelbaum *et al.* 2002, p. 122)

The ongoing globalisation process requires a company to create an organisation fit including the four main aspects personal, strategy, structure and culture. Finding a balanced set of parameters enables an enterprise to successfully compete on a global market place. The following paragraphs will highlight

¹¹ By referring to Davenport (1996): *"Some principles of Knowledge Management"* in: Strategy, Management, Competition



important globalisation related issues and establish causal linkages between these various aspects.

3.7.1 The Process of Globalisation

Globalisation makes it possible for a company to enter foreign markets and utilise the company's competitive advantages outside its domestic market to get profits. Globalisation in a company always goes through several stages. In the first phase the company only sells its products in the domestic market for the local demands. Since the industrial revolution, the productive efficiency improved and the cost of R&D increased.

Furthermore the product life cycle shortened, leading the company to begin selling its products abroad to get a profit. Gradually exports became a more suitable method in the company's development. The next step in the process may be the establishment of an international sales organisation in a number of countries. There may be several forces behind developments of this kind, for instance, customs duty, proximity to the market and availability of manpower. As barriers of trade and investment declined, and along with technological changes, FDI became the mainstream instead of establishing an international sales organisation (Dunning, 1992, pp.193-205).

Heenan & Perlmutter (1979) developed a model describing the four different attitudes of the management in the headquarters of the MNC's towards the subsidiaries, reflecting the process of globalisation in another way (Dörrenbächer, 2000, p.11). With specific regard to the implication for IHRM (international human resources management), the typology is often referred to as MNE international staffing orientation. This typology is now usually



described as identifying four types through 'the EPRG Profile', ethnocentric, polycentric, regiocentric or geocentric, reflecting the process of globalisation as figure 3-7 shows (Heenan & Perlmutter, 1979, p.18-19).

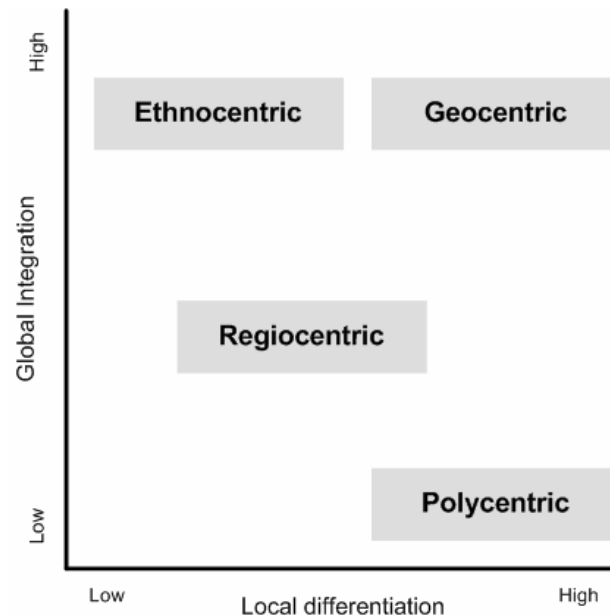


Figure 3-7: EPRG – Model

(Source: Adapted from Heenan & Perlmutter, 1979, p.19)

➤ Ethnocentric Policy

An ethnocentric approach reflects a phenomenon that the headquarters of a multinational enterprise has the right of making the strategic decision while the subsidiaries are dependent on these instructions. The major implication of this approach with regard to the employees is that all key management positions (including the expatriates and the managers at the headquarters) are filled by parent-country nationals.

➤ Polycentric Policy

A polycentric staffing approach decentralises human resource management and the right of strategic decision-making to subsidiaries, resulting in host country nationals occupying key



management positions in the subsidiaries, while parent country nationals occupy positions in the headquarters. In addition it is difficult for local employees in the subsidiaries to rise to the key positions in the headquarters.

➤ **Regiocentric Policy**

A regiocentric approach reflects the regional strategy and the structure of the MNC's, developing regional staff for key positions anywhere in that region. In the region, the managers of the subsidiaries have autonomy to some extent.

➤ **Geocentric Policy**

A geocentric approach is *"one seeking the best people for key jobs throughout the organization, regardless of nationality"* (Hill, 2005, p.623). However, this approach might be executed most effectively when the MNC's have a high degree of integration among the headquarters and the subsidiaries.

3.7.2 Multinational Corporations

A multinational corporation is defined as "an enterprise that engages in foreign direct investment and owns or controls value-adding activities in more than one country". This concept has been widely accepted. (Dunning, 1992, p.3) However, because of the development of the MNC's, the threshold definition of a multinational enterprise is limited to describe the characteristics of the MNC's in the new business environment OECD has redefined the MNC's.

It is stating the characteristics of MNC's as follows: firstly, a multinational corporation is usually composed of companies or other entities established in more than one country. Secondly, the entities in the MNC's are operating under the supervision of the



same management, having the same global strategy. Besides, the different entities are expected to co-operate in various ways and to assist one another to facilitate the observance of the global strategies. Sometimes the right of decision making is decentralised to the subsidiaries and the subsidiaries have different strategies according to the local market. Thirdly, for superior business performance, they should share the knowledge, the resources and the responsibilities.

The aim of most of the MNC's is to gain competitive advantage and superior financial performance by utilising the parent company's core competence and the local resources in the global market. When the MNC's design their business strategy, they should identify and exploit the resource and capabilities of the firm in the global market and adapt to the pressures for local responsiveness, e.g. culture, laws and customer behaviours. Furthermore, the MNC's' global strategy should be consistent with the strategic options of the subsidiaries (Ghuri & Buckley, 2002, p.8-12).

3.7.3 Different Globalisation Strategies

MNC's always have four basic strategies in the globalisation, that is, international, multidomestic, global and transnational strategies (constructed by Bartlett and Ghoshal, 1992), as shown in figure 3-8.

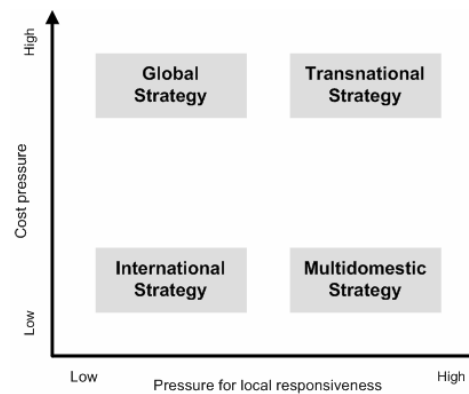


Figure 3-8: Four Basic Strategies

(Source: Adapted from Hill, 2005, p. 428)

➤ **International Strategy**

An international strategy is adopted when a firm possesses a valuable competitive advantage which is difficult for the competitors in the foreign market to imitate. In addition, it is characterised by a relatively low pressure for local responsiveness and cost reductions. This kind of strategy is most likely to be found in firms with products developed for domestic markets which will later be sold abroad (Hill, 2005, p.428).

➤ **Multidomestic Strategy**

Multidomestic strategies are evident in MNC's with national units that are highly responsive to local needs. These companies have to customise their products in order to meet the local demands but at the same time face only low pressure for cost reduction. However, because of the different strategies of the subsidiaries as a response to the high pressure for differentiation, the organisational strategy is often poorly co-ordinated between subsidiaries in different nations (Hill, 2005, p.429).

➤ **Global Strategy**

Global strategies "focus on increasing profitability by reaping the cost reductions that come from experience curve effects and



location economies" (Hill, 2005, p.429). They can be found in firms with products created for the global markets which are produced in highly efficient plants. Key strategic decisions are usually made in the headquarters.

➤ **Transnational Strategy**

The MNC's which adopted transnational strategies are seeking for a balanced mix of global integration, local differentiation and cost reduction. Furthermore these companies are seeking to reap the benefits from experience curve effects and location economies. They are also characterised by an intensive organisation-wide coordination of knowledge and shared decision making. The term 'global learning' is important in the MNC's adopting the transnational strategies (Hill, 2005, p.430).

3.8 The Role of the HR-Department

When talking about the globalisation, we have used the concept of different international staffing policies to explain the different international strategies. Therefore the role of HR department is always changing according to the circumstances. Within the KM process the HR department is critical as it has to implement its different responsibilities, e.g. translating the business strategy into specific activities for the employees, recruiting and retaining the right people possessing the specific knowledge needed (Stone, 2002, p.66). Therefore, four major roles have been identified depending on the various approaches.

➤ **Strategic Partner**

In this context the focus is on "... *contributing to the achievement of the organisation's objectives by translating business strategy into action*" (Stone, 2005, p.9). This results in three different advantages for a company:



- It is easier for the organisation to accept the transformation, because the transition time can be reduced.
- The organisation may give feedback much more quickly and increase the level of motivation and satisfaction.
- The organisation may achieve better financial performance due to more effective strategic activities.

➤ **Administrative Expert**

Administrative expert refers “... to the efficiency of HR managers and the effective management of HR activities so that they create value” (Stone, 2005, p.9). These are the basic functions of the HR department in the organisation. It focuses on improving all processes in the organisation, increasing the effectiveness of recruitment and training.

➤ **Employee Champion**

The HR department is expected to focus on the operational problems and to be “... the employee's voice in the management decisions” (Stone, 2005, p.10). As an employee champion the activities of the HR department are as follows:

- Understanding the employees' needs and ensuring the considerations of their concerns in the decision making process.
- Promoting commitment and helping the employees to achieve better performance.
- Facilitating the emergence of cross-functional relationships and establishment of mutual trust among the employees



➤ **Change agent**

The HR department should serve as a catalyst for the transformation within the organisation. In this regard the task is to organise the activities of creating knowledge by recruiting or other HR activities.



4 Research Model

4.1 Introduction

After discussing the various aspects of KM and the challenges deriving from an increasing global competitive environment we found four important factors with great influence on KM, especially with regard to knowledge sharing. The four main variables identified are shown in figure 4-1 and constitute the variables for an experimental model designed to test the correlation between the variables and their effect on KM.

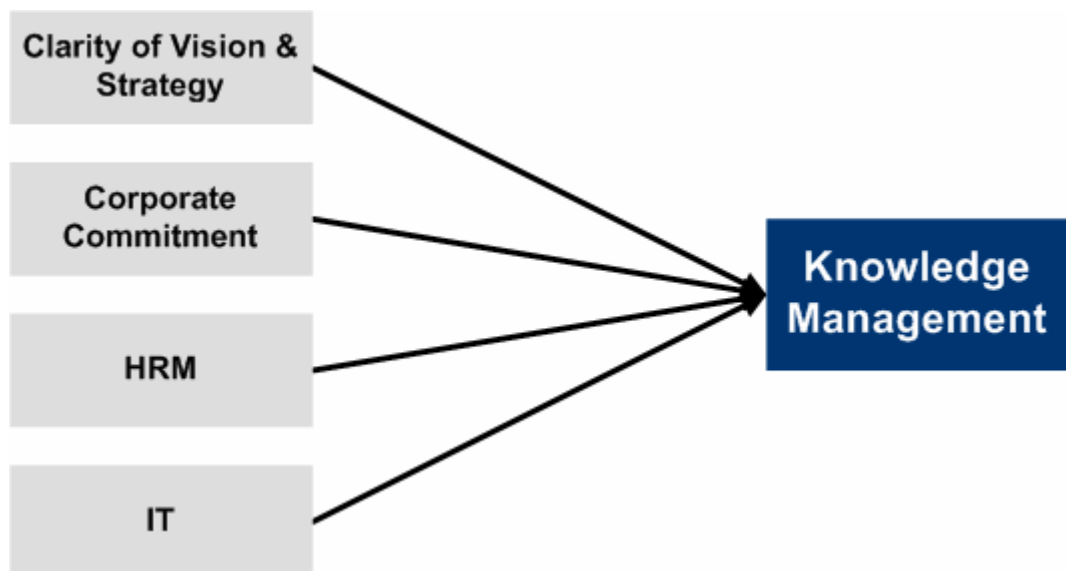


Figure 4-1: Factors of KM

The four factors are so-called independent variables, which has hypothesized cause on a dependent variable. Knowledge Management in this model represents the dependent variable, which we try to predict. A path analysis will be used in order to analyse the relationships between dependent and independent variables and test the hypotheses which will be presented in the next paragraph.



4.2 Hypotheses

Based on the theoretical discussion and the four factors with expected great influence on KM we have formulated two main hypotheses.

- **Hypothesis 1 (H1):**
- **The Key Success Factors of Knowledge Management are not dependent on the particular industry a company belongs to.**

With regard to the four variables shown in figure 4-1 it is possible to create sub-hypotheses

H1a: referring to the first variable: there is no significant difference among the various industries.

H1b: referring to the second variable: there is no significant difference among the various industries.

H1c: referring to the third variable: there is no significant difference among the various industries.

H1d: referring to the fourth variable: there is no significant difference among the various industries.

- **Hypothesis 2 (H2)**
- **The Key Success Factors of Knowledge Management complement and influence each other significantly.**



This general assumption can be further divided into four sub-hypotheses addressing the relationships of the variables in particular and allowing for a ranking of the variables.

H2a: Clarity of vision & strategy, corporate commitment, HRM and IT have significantly positive influence on Knowledge Management.

H2b: Clarity of vision & strategy and Corporate Commitment have significantly positive influence on IT.

H2c: Clarity of vision & strategy and Corporate Commitment have significantly positive influence on HRM.

H2d: Clarity of vision & strategy has significantly positive influence on Corporate Commitment.

4.3 The Operationalisation of the Concept

The following paragraphs will exemplify the causal link between the different hypotheses, the latent independent variables chosen and the theories discussed in the previous chapter¹².

➤ Variable 1: Clarity of Vision & Strategy (CV)

This first variable is of a generic and super ordinate character. KM is not an end in itself and has therefore to be aligned with the corporate strategy. Its goals must influence the company's vision and mission to the same extent as financial objectives guide the long-term development. Otherwise it will be difficult to transfer

¹²"*breaking down a complex concept into dimensions and indicators is called the operationalisation of the concept*" (Antonius, 2003, p.17)



knowledge effectively. Therefore special attention has to be paid to the understanding and awareness of the contextual relationship of success, strategy and vision. Such company-wide strategic learning process is dependent on several factors.

It is necessary to establish an effective communications network conveying the intention of the overall corporate strategy. Furthermore, an internal architecture has to be established allowing each employee to directly determine the effect on the corporate strategy of his or her personal actions. Moreover, it is necessary to implement a dynamic feedback and problem-solving process. This in turn will not only trigger a constant discussion but also motivate the people and focus the entire organisation. In addition, since fundamental disagreement and refusal may be limited potential barriers for implementation may be avoided or eliminated as well.

In order to test the effect of a clear vision and strategy on KM several indicators have been used, namely the attitude towards KM and the combination of KM and business strategy.

➤ **Variable 2: Corporate Commitment (CC)**

The second variable represents the result of encouraged openness, mutual trust and the willingness to strive for excellence. The top-management has to function as an advocate of KM in this respect. It is not enough to just declare the importance for the company. It is essential that all senior executives promote and encourage the acceptance of the KM activities by giving example every day.



Such leadership is important, because it can be seen as a senior manager's attempt to advocate corporate commitment. Based on the previously discussed clear understanding and awareness, commitment towards KM in general and knowledge sharing in particular is also dependent on linking the corporate goals specifically to group and individual objectives. In this context cascading the organisation's intention means to directly involve the employees and make them an active part of the process. In the same way the corporate culture as a result of shared values, norms and beliefs plays a vital role for creating this commitment on every level within the company.

There are two indicators, namely corporate culture and leadership in the statistical model, which have been used to test the correlation between corporate commitment and its effects on KM.

➤ **Variable 3: HRM**

Human Resource Management in this respect is considered having a great impact on the process of Knowledge Management. Based on this assumption the HR department should be responsible for integrating and sharing knowledge around the organisation. Thereby the HR department becomes a cross sectional area within the company which can be best described as the corporate cockpit for all KM activities.

The intention was to determine the significance and relationship between the variable 3 and its expected effects on KM based on the indicators authority, capacity and responsibility.

➤ **Variable 4: IT**

Nowadays employees have to deal with a great amount of information, e.g. materials, reports and analyses. Categorisation



and classification of these materials is essential for effective work. In this respect the role of IT from a KM point of view is to facilitate a systematic approach for filtering and storing people's knowledge.

Two indicators – access to multiple formal channels of communication and a sophisticated technological infrastructure – have been used in the statistical model in order to determine the significance of variable 4.



5 Empirical Studies

5.1 Sample

➤ Identifying the Population

"A population is considered to be any group that shares a set of common traits" (Black, 1999, p.111). In our research, we defined all the MNC's as the population.

➤ Sampling

For the aims of experimental studies, we took a representative sample trying to draw conclusions from. Because of the limits on time, money and language, we used the method of purposive sampling which *"... hand-pick subjects on the basis of specific characteristics"* (Black, 1999, p.118). In our research, we took the MNC's which have established headquarters or subsidiaries in mainland China, Germany, United Kingdom, Hong Kong, Singapore and Sweden as the sample.

➤ Sample Size

Adequate sample size is required to access significance of the research. Kline (1998) has presented that in general, if one wants to test the variables, it is better to contain 10 times as many as observations as parameters (ideally 20 times). According to this, our sample size is 80-160 (eight parameters formed in the hypotheses).

However, Path Analysis is a large sample technique; therefore *"... it is important that the sample size is large enough that correlations are reliably estimated"* (Tabachnick & Fidell, 1996, p. 640). Comrey and Lee (1992) suggest the following categorisation: 50 is very poor, 100 is poor, 200 is fair, 300 is



good, 500 is very good, and 1000 is excellent. Tabachnick and Fidell (1996, p.715) presented in many cases using the path analysis that a sample size of about 200 is adequate for small or medium size models. Thus, we think the sample size of 200 is appropriate in our research.

5.2 Experimental Process

➤ Measurement

There are two ways of measurement applied in our research. One is the nominal level of measurement. It is used to categorise the basic data of the sample according to the different characteristics of the companies. The other method is the ordinal level of measurement. It is used when the observations are classified according to different ranks or orders. This measurement was chosen in order to analyse all the data about the main four variables.

In addition, a typical Likert scale was used in order to state the ordinal variables (Antonius, 2003. pp.12-14). Each question is scored on a Likert scale with a range from 1 to 5. A low number represents a low level of importance of that variable on the dependent variable according to the respondents' opinion.¹³

➤ Statistical Analysis

Figure 5-1 presents the statistical model used to analyse the collected data.

¹³ In this case 1 represents the lowest score and 5 the highest.

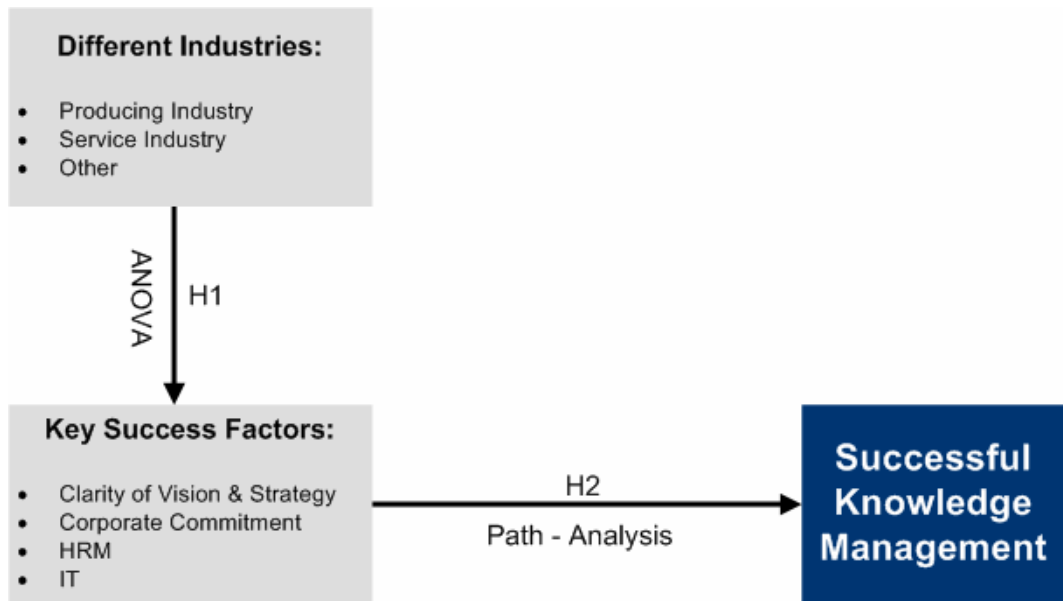


Figure 5-1: Statistical Analysis

- Descriptive Analysis

The descriptive analysis is a basic model to analyse the collected data. It includes the mean value, the variance and the standard deviation of the variables.

- Reliability Analysis

Reliability indicates whether we can trust the answers from the respondents. Cronbach's coefficient α is used to test the reliability of our research. Cronbach's α is a reasonable indicator of the internal consistency of instruments that do not have right-wrong marking schemes. Thus it can be used for both essay questions and questionnaire using scales such as rating or Likert scale (Balck, 1999, p.279-298). The higher α the higher is the internal consistency. With regard to a minimum acceptable criterion, Guilford (1965, pp. 439-440) suggested that α greater than 0.7 indicates a high reliability while α less than 0.35 indicates a low reliability and therefore should be rejected.



- One-way Analysis of Variance (ANOVA).

ANOVA was used to test if there are significant differences in various industries with regard to the key success factors of Knowledge Management.

- Path Analysis

Path analysis is the statistical technique used to examine the causal relationships between two or more variables. It is an extension of the regression model and was first developed by Sewall Wright in 1921 (2003, pp. 464-465). We used the path coefficient to show the direct and the indirect effects of an independent variable on a dependent variable in the path model.

The computer programme Statistical Product and Service Solutions (SPSS) was used in order to conduct the descriptive analysis, reliability analysis and ANOVA. Another computer programme called Analysis of Moment Structure (AMOS) was used for the path analysis.

5.3 The Questionnaire

➤ Content

There are two sections in the questionnaire. The first part is about basic data of the companies and the second part is dealing with the different factors expected to have a significant influence on the success of Knowledge Management. In accordance with the hypotheses the questionnaire was designed to address the most relevant and important areas. Thereby several clusters have been created, containing several questions and statements. The three versions can be found in appendix B to D. Table 5-1 presents the



logic behind the questions and their connection to the four variables previously described.

Table 5-1: Questionnaire Cluster

	Questions/Statements
Basic Data	Q1a: Which industry does your company belong to? Q1b: How many people are employed in your company?



Clarity of Vision	<p>S2a: Our company emphasises the importance of KM activities, e.g. development of knowledge databases, installation of yellow pages, conferences, quality circles, communities of best practice, advanced vocational training, benchmarking, discussion forum</p> <p>S2b: The importance of KM is explicitly stated in our corporate strategy, e.g. as part of the mission statement, as a long-term goal.</p> <p>Q2c: To what extent is your corporate strategy influenced by the KM concept?</p> <p>S2d: Corporate KM goals are transformed into personal objectives for every employee, e.g. contribution to the corporate knowledge database on a specific topic, establishment of a network of experts, preparation of lectures on a specific topic, facilitating training-on-the job projects, submitting articles or discussion papers on a specific problem.</p>
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<p>Corporate Commitment</p>	<p>S3a: An informal communications network facilitating the collaboration of our employees has emerged over time, e.g. personal contacts between the employees in different departments or different subsidiaries.</p> <p>S3b: Most of our employees are involved in KM activities, e.g. mentorship programs for entrants, job rotation, coaching, internal and external professional training, learning communities.</p> <p>S3c: Please indicate the importance of willingness to share knowledge with other employees as part of successful KM.</p> <p>S3d: Please indicate the level of importance of regular feedback and discussions about the progress in facilitating KM.</p> <p>S3e: Please indicate the level of importance of motivation and mutual trust between the participants in managing knowledge successfully.</p> <p>S3f: Please indicate the level of importance of absolute support and encouragement from the top-management in the KM process</p> <p>S3g: Others than the factors mentioned influencing the implementation of KM projects have to be considered.</p> <p style="text-align: right;">- 63 -</p>
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HRM	<p>Q4a: Is the Human Resource Department (HR) responsible for KM activities in your company?</p> <p>S4b: There are special experts in our company guiding the KM process, e.g. Knowledge broker, Chief Knowledge Officer.</p> <p>S4c: The managers of the HR Department have the capacity, authority and responsibility to coordinate the KM activities within the corporation</p> <p>S4d: The HR department plays an important role in the process of designing the KM strategy, e.g. developing goals and project plans, implementing the strategy in daily business, KM performance controlling.</p> <p>S4e: The HR Department is always the first choice for the employees asking for help when they encounter barriers to access some specific knowledge.</p> <p>S4e: The HR Department is always the first choice for the employees asking for help when they encounter barriers to access some specific knowledge.</p>
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IT	<p>S5a: Our company provides every employee access to multiple formal channels of communication, e.g. the internet, telephone, fax.</p> <p>S5b: For the purpose of knowledge management our company has built up a sophisticated technological infrastructure, e.g. knowledge databases, intranet, KM software.</p>
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6 Analysis

The following chapter will present an analysis of the data obtained from 191 valid responses. According to the experimental process previously described in the 4th chapter a descriptive analysis is applied first, that is, a classification of the MNCs according to the basic data. Furthermore the reliability of the questionnaire is tested at the same time. This will allow for conclusions with regard to differences between various industries. Finally a structural equation will be set up, covering the five variables (four independent and one dependent variable) s part of the path analysis.

6.1 Questionnaire Retrieval

The questionnaire was presented on a web page. The corresponding link was sent by E-Mails to randomly picked MNC's situated in Mainland China, Germany, Sweden, Hong Kong, Singapore and the United Kingdom. The translated versions used for the different countries are presented in Appendix B. The questionnaire was kept online for the period from 30th October 2005 until 11th November 2005. In total 191 valid responses have been received until 12th November 2005.

Table 6-1: Questionnaire Retrieval

	Sample	Returned	Response rate	Valid	Valid response rate
Mainland China	230	133	57.83%	132	57.39%
Germany	25	8	32%	8	32%
Sweden, UK, Hong Kong & Singapore	135	51	37.78%	51	37.78%
Total	390	192	49.23%	191	48.97%



Table 6-1 summarises all the details of the questionnaire retrieval and highlights the sample size, response rate and valid response rate. With regard to the total number of answers the response rate of nearly 50% can be regarded as very good.

6.2 Descriptive Analysis

The descriptive analysis was carried out in order to obtain information about the targeted companies and the variables.

6.2.1 Information about the Companies

The basic information of the companies, that is, the number of employees and the industry which a company belongs to are described by figure 6-1 as well as table 6-2.

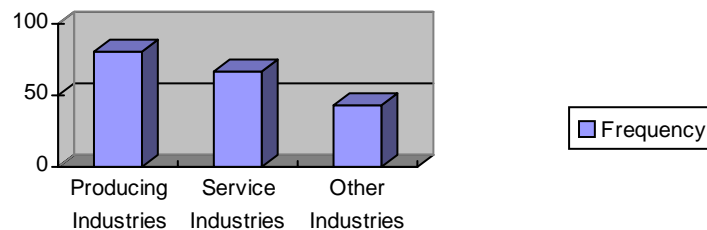


Figure 6-1: Various Industries

Both illustrations show that the majority of the companies belong to the producing industry, whereas about one third belongs to the service industry and another 22.5% position themselves in neither of the two categories.

Table 6-2: Distribution of Companies

	Frequency	Percent	Cumulative Percent
Valid	43	22.5	22.5
Others	81	42.4	64.9
Producing	67	35.1	100.0



Service	191	100.0	
Total			

Figure 6-2 and table 6-3 below provide information according to the size of the companies.

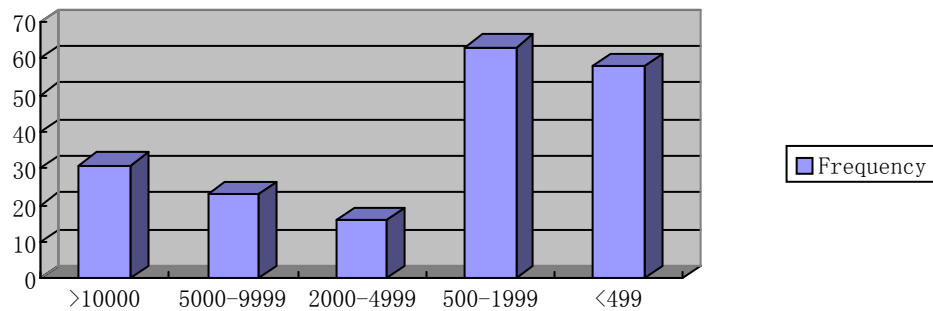


Figure 6-2: Number of Workers

A minority of only 8.4% of the companies employs more than 10000 people. These figures allow for the conclusion that our investigation was mainly focused on small and medium sized companies (SME's).

Table 6-3: Distribution of Numbers of Workers

	Frequency	Percent	Cumulative Percent
Valid > 10000	31	16.2	16.2
5000-9999	23	12.0	28.2
2000-4999	16	8.4	36.6
500-1999	63	33.0	69.6
<499	58	30.4	
Total		100.0	100.0



6.2.2 Descriptive Analysis of the Variables

The computer program SPSS was used in order to determine the means of the 19 indicators related to the five variables. By analysing the different opinions of the respondents on the four independent variables and comparing the mean value of the 19 indicators the aim was to find out which of these factors was more important for a successful KM implementation. The larger the mean value is, the more important the factor. Table 6-4 provides a list of all different indicators according to the importance of that indicator. The table contains 15 indicators¹⁴.

Table 6-4: Descriptive Analysis

Indicators	Questions related to the four variables	Order	Mean
5a	multiple formal channels of communication,	1	4.2042
3f	absolute support and encouragement from the top-management	2	4.0731
3e	motivation and mutual trust between the participants	3	4.0157
3a	an informal communications network	4	3.8848
5b	sophisticated technological infrastructure	5	3.8534
3c	importance of willingness to share knowledge with other employees	6	3.8010
2a	emphasis on the importance of KM activities	7	3.7853
2b	the importance of KM is explicitly stated in our corporate strategy	8	3.7696
3b	most of our employees are involved in KM activities,	9	3.5654
4d	the HR department plays an important	10	3.5455

¹⁴ The numbers 2 – 5 in the first column represent the four independent variables, that is, 2 = clarity of vision and strategy; 3 = corporate commitment; 4 = HRM and 5 = IT.



	role in the process of designing the KM strategy		
4c	the managers of the HR Department have the capacity, authority and responsibility to coordinate the KM activities within the corporation	11	3.4470
3d	importance of regular feedback and discussions about the progress	12	3.3927
4e	the HR Department is always the first choice for the employees asking for help when they encounter barriers to access some specific knowledge.	13	3.3788
2d	corporate KM goals are transformed into personal objectives for every employee,	14	3.3351
2c	corporate strategy influenced by the KM concept	15	3.2827

The descriptive analysis reveals a mean value for every indicator higher than 3. This in turn characterises all indicators being important KM. On the other hand, the five most significant indicators are: 5a – multiple formal channels of communication; 3f – absolute support and encouragement from the top management; 3e – motivation and mutual trust between the participants; 3a – an informal communications network and 5b – a sophisticated technological infrastructure. These top-ranked variables are related to Corporate Culture and IT which means that these two variables are more important in KM compared to the other two variables from the respondent's point of view.



6.3 Reliability

In order to determine the internal consistency reliability, Cronbach's α was used in the analysis. The higher the coefficient α is, the higher is the internal consistency. With regard to the minimum acceptable criterion, Guilford's suggestion was followed in the research. A coefficient α greater than 0.7 indicates a high reliability whereas a α -value less than 0.35 should lead to rejection.

Table 6-5: Reliability Values

Variables	Items/indicators	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Clarity of Vision & Strategy	2a	0.922	0.888	0.934
	2b	0.942	0.881	
	2c	0.641	0.972	
	2d	0.902	0.894	
Corporate Commitment	3a	0.949	0.982	0.985
	3b	0.951	0.982	
	3c	0.959	0.981	
	3d	0.939	0.983	
	3e	0.956	0.981	
	3f	0.940	0.983	
HRM	4c	0.977	0.966	0.984
	4d	0.968	0.973	
	4e	0.950	0.986	
IT	5a	0.914	-- ¹⁵	0.905
	5b	0.914	--	

¹⁵ The value is negative due to a negative average covariance among items. This violates reliability model assumptions. (cited from the output of SPSS 13.0)



➤ **Corrected Item-Total Correlation**

In the column labelled "corrected item-total correlation" of table 6-5 the figures show the correlation of each item and the total score from the questionnaire. In a reliable scale all items should correlate with the total score. If there is any particular item with a low correlation value (less than 0.3) then this specific item does not correlate with the entire scale. As a consequence thereof this item should be rejected and excluded from the analysis. As can be seen, such a situation has not occurred.

➤ **Cronbach's Alpha if Item Deleted**

Other figures in the column labelled "Alpha if item is deleted" are the values of the overall α if that item is deleted in the calculation. This figure reflects the change in Cronbach's α if a particular item would have been deleted. This would increase Cronbach's α , resulting in a higher α than the overall Cronbach's α before the particular item was deleted. In addition, this deletion would improve the reliability. As it is presented in the table none of the items here would substantially affect the reliability if they were deleted. The worst deviation can be found in the questions 2c and 4e. Deleting these questions would increase the α -value from 0.934 to 0.972 and from 0.984 to 0.986 respectively. Since this does not constitute a significant increase the particular items should not be deleted from the analysis.

➤ **Cronbach's Alpha**

Finally, the α -value represents the overall reliability of the scale. In this case, the α -values of the four variables are 0.934, 0.985, 0.984 and 0.905. Because all four exceed the minimum level of 0.7 significantly a high reliability can be assumed.



6.4 Analysis of Variance of Different Industries

There are 81 responses from the producing industry, 76 from the service industry and 43 from other industries. In this section, one-way ANOVA was used in order to analyse the differences of the various industries towards the variables Clarity of Vision and Strategy, Corporate Commitment, HRM and IT.

First, the hypothesis 1a has to be stated in a statistical way:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

This equation means that there is no significant difference between the various industries with regard to the first variable.

In contrast, an opposite assumption can be formulated:

H₁: They are not all equal.

This implies that there are significant differences between the various industries.

In a next step the level of significance had to be specified. Thus the level was set at 0.05 for the SPSS analysis. When interpreting the output, this level has to be compared with the column "Sig (p)" of table 6-6.



Table 6-6: Variances of Industries

Variables	Producing Industry	Service Industry	Other Industry	F	Sig(p)
	mean	mean	mean		
CV	3.4784	3.5336	3.6570	1.374	0.254
CC	3.7181	3.7960	3.9109	2.384	0.093
HRM	3.5301	3.2681	3.6000	2.413	0.091
IT	4.0247	3.9104	4.2209	2.484	0.085

Thereby the decision rule is as follows: If the significance value (usually labelled p) is less than 0.05 the null hypothesis H₀ is rejected. In case the significance value exceeds 0.05 H₀ is accepted. Since all four p-values are higher than 0.05 the corresponding null hypothesis can be accepted for every variable.

Additionally, the analysis reveals that the mean-values of each variable are higher than 3.2 indicating that the respondents seldom disagree with the hypothesised views on the four independent variables. Some mean values are even higher than 4 showing that the respondents support the hypothesised opinion on that variable utterly.

6.5 Path Analysis

The path analysis model has a long history which started in the 1930s as a method of studying direct and indirect effects of variables. Central of path analysis is that a set of additional regression is added to the original regression analysis to determine the indirect effects between the variables. The following path analysis was carried out by using the computer program called Analysis of Moment Structure (AMOS). AMOS is a software package helping to create a more realistic structural



equation model. Applying AMOS enables us to specify, estimate and present our model in an intuitive path diagram to show the hypothesized relationships among the variables.

6.5.1 Model Identification

Identification is a mathematical requirement prior to the path analysis.

➤ Establishing the Equations

The research aim was to find out whether the four independent variables of KM have significant influence on the success of corporate KM activities. According to the Hypothesis 2¹⁶, the following four equations have been established:

$$Y_1 \text{ (KM)} = b_{11} * X_1 + b_{12} * X_2 + b_{13} * X_3 + b_{14} * X_4 + a_1$$

$$Y_2 \text{ (IT)} = b_{21} * X_1 + b_{22} * X_2 + a_2$$

$$Y_3 \text{ (HRM)} = b_{31} * X_1 + b_{32} * X_2 + a_3$$

$$Y_4 \text{ (CC)} = b_{41} * X_1 + a_4$$

The abbreviations used therein to address each variable are explained as follows:

CV=Clarity of vision and strategy;

CC=Corporate commitment;

HRM= Knowledge Management by Human Resource Department

IT= sophisticated Information Technology

KM= successful Knowledge Management

¹⁶ H2a: CV, CC, HRM and IT have significant influence on KM; H2b: CV and CC have significant influence on IT; H2c: CV and CC have significant influence on HRM; H2d: CV has significant influence on CC.



These four equations are part of a structural equation model with regard to the relationships between the four independent variables and the dependent variable. Therein, Y_i stands for the dependent variable, X_{1-4} are the independent variables, that is, CV, CC, HRM and IT. B_{ij} are the path coefficients displaying the correlation between the independent variables and the dependent variable. In addition, a_i stands for the intercept in a regression equation.

➤ **Drawing Path Diagram by using AMOS**

The complexity of the path analysis model requires drawing a so-called path diagram in order to display all causal relationships between the independent and the dependent variables.

The path diagram of our hypothesised model is depicted in figure 6-3.

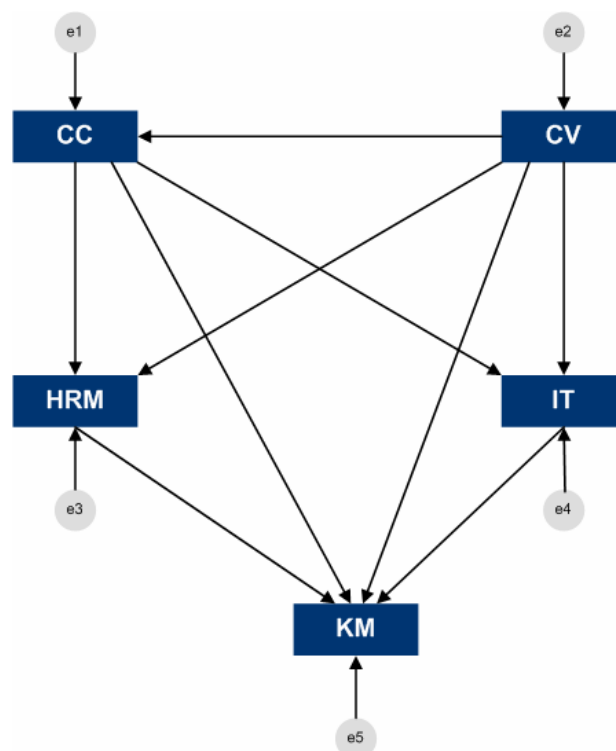


Figure 6-3: Input Path Diagram



All variables are represented by rectangles. Each path is represented by an arrow. The circles with an arrow pointing to the dependent variables are the error term. These so-called disturbance terms of the path analysis are part of every regression equation. Furthermore it should be mentioned that in the path analysis one does not talk about independent and dependent variables. Instead, the notion exogenous and endogenous variable is used respectively.

6.5.2 Model Testing

There are three main steps in testing the hypothesised model. First, it has to be tested if the hypothesised model fits the data. Then, the relationships between the variables according to the significance level of the estimated parameters have to be assessed. Finally, the causal relationships between the independent variables and the dependent variables according the estimated parameters have to be analysed.

➤ Assessing the Fit of the Model

First, it should always be examined if there are errors and warnings displayed in the output, which is shown below in figure 6-4.

Computation of degrees of freedom

Number of distinct sample moments:	= 20
Number of distinct parameters to be estimated:	= 19
Degrees of freedom:	= 20 – 19 = 1

Minimum was achieved

Chi-square	= 3.699
Degrees of freedom	= 1
Probability level	= 0.054

Figure 6-4: AMOS Output 1



Since AMOS reports that the minimum was achieved with no errors or warnings it is safe to proceed to the next output section, the "Fit Measures" output.

The following part is divided into an absolute fit index test and a comparative fit index test.

➤ **Absolute Fit Index**

The absolute fit is always tested by the Chi-square value. By Chi-square, the difference between the observed data and the hypothesised model is determined. Based on the hypotheses a low difference was expected. In fact, the ideal would be to have no difference between the Chi-square and the model. In this case, the Chi-square value would equal zero and the probability level of a zero Chi-square would equal 1. As shown in figure 6-4 and table 6-7, the probability level is 0.054 with the Chi-square value of 3.699 and 1 degrees of freedom, which indicates the probability value of the Chi-square test is higher than the 0.05 level used by convention. Based on this, the null hypothesis, stating that the model fits the data, is accepted.

➤ **Comparative Fit Indices**

The Chi-square test showed a good fit between the hypothesised model and the data collected. However, because the Chi-square value of the absolute model fit is very sensitive to the sample size, it would not be appropriate if the Chi-square value was taken to determine the fit of model solely. Therefore, many researchers (e.g. Bentler & Bonett 1980, Anderson & Gerbing, 1984, Bollen, 1989b) suggest that other indices such as CFI (comparative fit index), NFI (normed fit index), RMSEA (Root Mean Square Error of Approximation) and TLI (Tucker-Lewis



Index) should be calculated at the same time in order to assess the overall fit of a model.

These indices use an "independent model" as a basis of comparison to assess the hypothesized model. Most researchers (e.g. Anderson & Gerbing, 1984; Hu & Bentler, 1999) suggested that a NFI of 0.9 or better, a CFI of 0.9 or better, a TLI of 0.95 or better and a RMSEA of 0.06 or lower indicate a good fit.

Table 6-7: Fit Indices

Index	Value	Ideal Value
Chi-square	3.699	P-value>0.05
CFI	1.000	>0.9
NFI	1.000	>0.9
TLI	0.996	>0.95
RMSEA	0.049	<0.06

Table 6-7 contains the fit indices of the model in this study. All of them meet the aforementioned requirements with regard to the ideal value, which reveals a good comparative fit of the hypothesised model. Therefore, it can be concluded that the fit of this model is perfect, which means that the parameters estimated on a basis of the hypothesised model are effective to explain the relationships between the variables.

➤ Significance Tests of Individual Parameters

After it has been evaluated and supported that the model fits the data, the statistically significant test¹⁷ within the model have to be examined. Before we discuss the result, we should simplify the concept of statistical significance first. In normal English, "significant" means important, while in statistics "significant" means probably true. When we say a result is "highly significant"

¹⁷ It is a test for determining the probability of a given result could occur by chance.



it means that it is very probably true, it does not mean it is highly important.

The output generated by AMOS – which is shown in figure 6-5 displays the un-standardised estimate, its standard error (S.E), the estimate divided by the standard error (abbreviated C.R. for Critical Ratio) and the probability value¹⁸.

Regression Weights

			Estimate	S.E.	C.R.	P
CC	<--	CV	0.847	0.017	48.998	0.000
IT	<--	CV	0.347	0.037	9.360	0.000
HRM	<--	CC	0.548	0.103	5.301	0.000
HRM	<--	CV	-0.473	0.102	-4.629	0.000
IT	<--	CC	0.478	0.037	12.754	0.000
KM	<--	IT	0.235	0.032	7.394	0.000
KM	<--	CV	0.321	0.026	12.308	0.000
KM	<--	HRM	-0.038	0.011	-3.326	0.001
KM	<--	CC	0.510	0.028	17.936	0.000

Figure 6-5: AMOS Output 2

➤ **Path Coefficient Estimated**

The objective of the path analysis is to provide estimates of the magnitude and significance of the hypothesised causal connections between the variables. Usually a graphical presentation of the coefficients is used to measure or estimate the relative size and direction (+ or -) of various net effects (including the direct effects¹⁹ and indirect effects²⁰) between variables.

¹⁸ In all cases, the p-value tells you how likely something is to be not true.

¹⁹ Direct effect is indicated by the path coefficient from one variable to another.

²⁰ Indirect effect is the sequence of paths through one or more intermediate variables.



There are two kinds of path diagram displaying the path coefficients, one is an input path diagram (figure 6-3), which is drawn beforehand to help to plan the analysis and represents the causal connections being predicted by our hypothesis. The other one is an output path diagram, which represents the results of a statistical analysis, and shows what was actually found. Therein the results of the previous analysis are shown. Figure 6-6 depicts the output path diagram for this study.

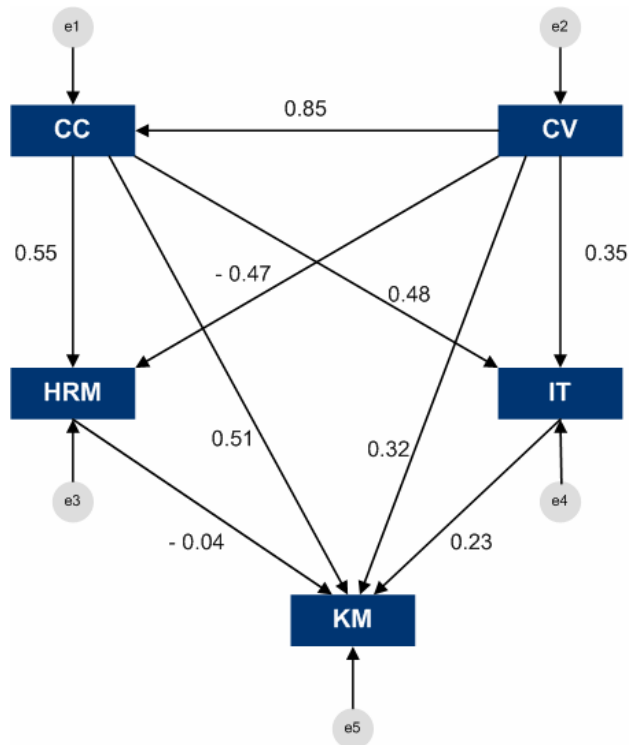


Figure 6-6: Output Path Diagram

6.5.3 Direct Effects

In the next step the output path diagram shall be explained in more detail by highlighting the direct effects among the five variables and comparing the different path coefficients estimated in four hypothesised equations.

➤ **Equation 1:**



$$Y_1 (\text{successful KM}) = b_{11} * X_1 (\text{CV}) + b_{12} * X_2 (\text{CC}) + b_{13} * X_3 (\text{HRM}) + b_{14} * X_4 (\text{IT}) + a_1$$

According to the output path diagram shown in figure 6-6, the table 6-8 is formed in order to show explicitly the causal relationships between the four independent variables and the dependent variable.

Table 6-8: Equation 1 Results

Dependent Variable	Independent Variables	Path coefficient	Significance (p-value)
Y ₁ (KM)	X ₁ (CV)	0.32(b ₁₁)	0.000*
	X ₂ (CC)	0.51(b ₁₂)	0.000*
	X ₃ (HRM)	-0.04(b ₁₃)	0.000*
	X ₄ (IT)	0.23(b ₁₄)	0.001*

*shows that the variable has significant influence on Y₁

These four independent variables all have significant influence on the dependent variable (successful KM). A comparison of the path coefficients reveals that the relationship between Corporate Commitment and successful KM is the most intensive one. The next strongest relationship is towards b₁₁ (0.32)-Corporate Commitment and then b₁₄ (0.23)-IT. Finally, the model suggests a negative influence of b₁₃(-0.04)-HRM on a successful KM implementation.

➤ **Equation 2:**

$$Y_2 (\text{IT}) = b_{21} * X_1 (\text{CV}) + b_{22} * X_2 (\text{CC}) + a_2$$

There are complementary and influencing relationships between the hypothesised key success factors of Knowledge Management, which are listed in table 6-9.



Table 6-9: Equation 2 Results

Dependent Variable	Independent Variables	Path coefficient	Significance (p-value)
Y ₂ (IT)	X ₁ (CV)	0.35 (b ₂₁)	0.000*
	X ₂ (CC)	0.48 (b ₂₂)	0.000*

*shows that the variable has significant influence on Y₂

From the table above, it can be seen that both factors have a significantly positive influence on the decision of establishing a good infrastructure. In this study the factor-CC is more important than the factor CV.

➤ **Equation 3:**

$$Y_3 (\text{HRM}) = b_{31} * X_1(\text{CV}) + b_{32} * X_2(\text{CC}) + a_3$$

The connections between the factors-CV; CC and HRM are made explicit in table 6-10.

Table 6-10: Equation 3 Results

Dependent Variable	Independent Variables	Path coefficient	Significance (p-value)
Y ₃ (HRM)	X ₁ (CV)	-0.47 (b ₃₁)	0.000*
	X ₂ (CC)	0.55 (b ₃₂)	0.000*

*shows that the variable has significant influence on Y₃

As stated in the table above, a high level of Corporate Commitment facilitates KM activities run by the HR department. According to the analysis, stating the KM objectives explicitly does not strengthen the HR department's position with regard to promoting knowledge creating and transfer.



➤ **Equation 4:**

$$Y_4 (CC) = b_{41} * X_1(CV) + a_4$$

Table 6-11 presents the results of equation 4.

Table 6-11: Equation 4 Results

Dependent Variable	Independent Variables	Path coefficient	Significance (p-value)
Y ₄ (CC)	X ₁ (CV)	0.85 (b ₄₁)	0.000*

*shows that the variable has significant influence on Y₁

The analysis shows that the factor-CV has a significantly positive influence on Corporate Commitment.

6.5.4 Indirect Effects and Total Causal Effects

One feature of Path Analysis is that it displays the indirect effects among the variables, which shall be discussed in detail in the following paragraphs.

➤ **CV → KM**

Considering KM as the dependent variable in the path diagram previously shown and CV as the independent one, the indirect effects are calculated by multiplying the path coefficient for each path from CV to KM. Therefore, the corresponding equations are as follows:

$$CV \rightarrow IT \rightarrow KM \text{ is } 0.35 * 0.23 = 0.08$$

$$CV \rightarrow HRM \rightarrow KM \text{ is } -0.47 * (-0.04) = 0.02$$

$$CV \rightarrow CC \rightarrow KM \text{ is } 0.85 * 0.51 = 0.43$$

$$CV \rightarrow CC \rightarrow HRM \rightarrow KM \text{ is } 0.85 * 0.55 * (-0.04) = -0.02$$



Thus, the total indirect effect of CV is +0.51. The direct effect is only 0.32. The total causal effect of CV on KM equals the sum of direct and indirect effect, which is $0.83 = (0.51 + 0.32)$.

➤ **CC → KM**

In this particular case CC is considered the independent variable and KM the dependent one. Based on this assumption the indirect effects of CC on KM are:

CC → HRM → KM is $0.55 * (-0.04) = -0.02$

CC → IT → KM is $0.48 * 0.23 = 0.11$

Therefore, the total indirect effect of CC is +0.09. The direct effect is 0.51. The total causal effect of Corporate Commitment on KM is $(0.09 + 0.51) = 0.60$.

For a better understanding table 6-12 shows all details according to this calculation rule.

Table 6-12: Total Causal Effects

Variables	Direct Effects	Indirect Effects	Total Causal Effects
CV	0.32	0.51	0.83
CC	0.51	0.09	0.60
HRM	-0.04	---	-0.04
IT	0.23	---	0.23

After comparing the figures presented in table 6-12 it becomes apparent that only considering the direct effects of the variables on Successful KM will lead to a false conclusion, namely, that Corporate Commitment is the most important factor in managing knowledge as the analysis of equation 1 suggested at first. By looking at both, the direct and indirect effects, another assumption occurs. In managing knowledge successfully, "Clarity



of Vision and Strategy” is the most important factor followed by “Corporate Commitment” and “IT” as the other key success factors of KM. Still, the responsibility for the KM activities should not be located within the HR department, since negative effects have been indicated.

6.6 Summary of the Analysis

Table 6-13 summarises the results of all applied statistical methods and comments on the validity of the previously defined hypotheses.

Table 6-13: Summary of Analysis

Hypotheses	Consequence
H1a: referring to the first variable-CV: there is no significant difference among the various industries.	Accepted
H1b: referring to the second variable-CC: There is no significant difference among the various industries.	Accepted
H1c: referring to the third variable-HRM: There is no significant difference among the various industries.	Accepted
H1d: referring to the fourth variable-IT: There is no significant difference among the various industries.	Accepted
H2a: CV, CC, HRM and IT have significantly positive influence on KM.	Accepted partly



H2b: CV and CC have significantly positive influence on IT.	Accepted
H2c: CV and CC have significantly positive influence on HRM.	Accepted partly
H2d: CV has significantly positive influence on CC	Accepted



7 Concluding Remarks

7.1 Reflections

The purpose of this study was to identify some key success factors of Knowledge Management in order to get a better understanding of the complementary and influential relationship existing between these factors and their effects on KM from a general point of view.

The hypotheses have been developed on the basis of the findings from the theoretical study. Using a quantitative method to test these hypotheses provided interesting results.

It became obvious that companies in different industries all treated the identified four variables as factors with a significantly high influence on Knowledge Management activities. Additionally, the results of the ANOVA allow for the conclusion that the Key Success Factors of Knowledge Management are not dependent on the particular industry a company belongs to. This is an important starting point for a further interpretation of the findings.

With regard to the four hypothesised variables for a successful Knowledge Management, the quantitative results clearly point out:

➤ **High internal consistency reliability can be assumed**

In our research, the α -values of the four variables representing the overall reliability of the scale are 0.934, 0.985, 0.984 and 0.905. These figures are all significantly above the minimum level of 0.7, which suggests a high reliability.

➤ **Investigation is mainly focused on Small and Medium sized companies (SME's).**



The descriptive analysis reveals that a minority of only 8.4% of the companies employs more than 10000 people. These figures allow for the conclusion that the following analysis was taken on a basis of the responses mainly from small and medium sized companies (SME's). Therefore the findings can be mainly generalised and applied with regard to this specific category.

- **Special attention should be paid to the three key success factors CV, CC and IT.**

Generally, the results of the ANOVA indicate that there are no significant differences between the various industries with regard to four independent variables since the significance value of the four variables is higher than 0.05. In other words this implies that the hypothesised four Key Success Factors of KM facilitate the development of competitive advantages deriving from a successful KM implementation. In this context, the three factors CV, CC and IT have been identified as being paramount, which was also supported by the outcome of the path analysis.

Comparing the total causal effects of the four independent variables leads to the following ranking:

a) CV is the most important factor in Knowledge Management. This variable influences the result of KM activities in two ways, directly (0.32) and indirectly (CV→CC→HRM→KM; CV→CC→KM; CV→HRM→KM; CV→IT→KM: 0.51).

b) CC is less important than CV, but it is also a critical factor – having direct (0.51) and indirect effects (0.09) – leading to a success of KM.



c) IT also has positive influence on Knowledge Management although this variable has only a direct effect.

Therefore it can be concluded that the better the understanding of the corporate vision and strategy, the more developed the corporate commitment and the better the IT, the more effective are the KM activities. This general conclusion allows for further assumptions:

d) A company should emphasise the translation process of the KM strategy into operating terms. Moreover, establishing a good infrastructure in the company for sharing and storing knowledge enhances the entire KM process.

e) A high degree of Corporate Commitment reflecting a good corporate culture and the leadership's support for KM activities is critical for building a technological infrastructure for KM purposes. Corporate Commitment influences the way of the employee's interaction and performance and increase their work effectiveness. IT in this process is the best instrument for the employees to share knowledge and improve efficiency. The path coefficient indicates that Corporate Commitment helps the employees to create and share knowledge using the given infrastructure, e.g. data bases and intranet.

f) The factor-CV is also important for IT. Clarity of vision and strategy helps to align the business strategy with the KM strategy. The estimated parameters lead to the assumption that if the Knowledge Management strategy is explicitly stated as part of the overall business strategy the employees will develop a higher motivation to share knowledge using the infrastructure provided



for this purpose. Thus, if a company wants to establish a corporate culture with mutual trust for creating and sharing knowledge, it should clarify its vision and long-term strategy first. KM can therefore effectively be implemented if the employees are provided with both “mental” support and corresponding technological tools. If a company fails to create an atmosphere of openness, shared values and beliefs and in addition lacks to provide the appropriate infrastructural equipment necessary it is likely that the various KM initiatives will not create the desired outcome.

g) Since a negative relationship between the HRM and successful KM has been shown it can be assumed, that KM is less effective the more a company relies on the HR department to organise and coordinate all KM activities. This result suggests that the responsibility for managing knowledge should not be assigned to the HR department. Instead a company should find another way to execute its KM activities.

In addition, the path analysis has made further aspects apparent, supporting previous findings of the descriptive analysis:

4) The fit of the hypothesised model is perfect.

The absolute fit index and other comparative indices, which are used to measure the fit of a model, have got ideal values. These results reveal that the parameters estimated on a basis of the hypothesised model are effective to explain the relationships between the variables.

5) The estimated parameters are highly significant.



The p-value of all the estimated parameters is always less than 0.05, which means the estimated path coefficients among the five variables – including four independent variables and one dependent variable – are true, explaining the relationships among them.

7.2 Managerial Implications

Since it was possible to pinpoint and identify criterion with a high significance for successful KM regardless of the industry a company belongs to the research helps to make KM more applicable. Based on the findings described above it is possible to draw conclusions with regard to practical issues helping companies to better organise and manage their KM activities.

➤ Importance of Human Capital

This study has shown that it is necessary to facilitate the KM activities around the organisation. And the most important factors are related to people working in the companies. The top-management should help clarifying the vision and strategy of that company and supporting KM. Furthermore an organisational culture for creating, sharing and transferring knowledge must be fostered. Employees have to be convinced to share their knowledge. Therefore, a company should promote all activities and think of motivation increasing tools, which will help to reap the benefits of HC application.

➤ Establishing a Network

Human Capital can be regarded the “software” of the company. In order to use it efficiently it is necessary to provide the right “hardware” as well. In this sense, the “hardware” are the various formal and informal channels of communication for the employees.



This will allow a company to organise a vibrant flow and transfer of knowledge on all corporate levels.

➤ **Appoint a Chief Knowledge Officer (CKO)**

Because the analysis has shown that the HR department should not be responsible for the corporate KM activities we suggest appointing a CKO and providing him or her with the power and authority to organise all KM processes within the company.

➤ **External Benefits**

Implementing a KM strategy as suggested above will also have external effects. Since the study has shown that general aspects of KM are not limited to company or industry specific circumstances it is likely that companies can compare their activities. This will allow for a benchmarking and best practice approach respectively. This will not only create new innovative attempts to deal with this topic but also increase the transparency.

Especially with regard to the company–supplier relationships the findings will help to reap benefits and increase effectiveness and efficiency. In times of globalisation and dynamic competition it is more and more important to establish a strong and reliable partnership with key suppliers. For example, general similarities will facilitate negotiations about a combined KM approach. This in turn is likely to increase the loyalty of the partners and eventually helps to adapt to the fast changing business environment.



7.3 Outlook

Competitive pressures force the organisations to reassess the way they operate. To deal with the entry of global companies into the market, escalating energy costs, razor-thin margins and competitors that continue to boost their efficiency and productivity, businesses must achieve excellence or end up at a serious disadvantage. Finding the unique factors addressing the problem best is no simple task. In this respect, it has become obvious that the entire KM concept becomes more and more important and that the awareness is constantly growing in the same way as knowledge is substituting the old factors of production.

This process inevitably requires cooperation among various departments and business units so that elements can be standardised and a common understanding can be created. The analysis has shown that there are general KM related aspects which should be considered when designing and executing a company specific KM strategy. Understanding the factors of universal character as guiding principles helps to focus the discussion on operational terms. By carefully designing and organising KM, a company can make a fundamental shift in the way it manages processes and achieve sustained growth and profitability. KM improvements flow into many corners of an organisation and can help increase competitive advantage. When a company fully understands the risks and returns of various scenarios, it can make solid decisions that provide lasting benefits. Future research will have to analyse to what extent the identified factors have influenced the development of a generic KM model applicable in companies from various industries.



Appendix

Appendix A

(Examples from practice)

Company	KM Key Success Factors
Lucent Technologies	<ul style="list-style-type: none">• Systematic approach to bring the engineers closer to the market.• An excellent recruitment.• Leadership plays an active role.• A certification process to disseminate the knowledge worldwide.• Creation of the right environment for people to work in.
British Airways	<ul style="list-style-type: none">• Examination of links between the corporate mission and Knowledge Management.• Managing culture and people for sharing knowledge.• Establishing a database of the company's contacts, e.g. yellow pages and introduction of a corporate-wide search engine for the employees to find the right information.• Attempt to combine Knowledge Management into business goals without taking them as extra work.
IBM	<ul style="list-style-type: none">• Translation of implicit knowledge into explicit knowledge, making knowledge visible around the company.• Building a knowledge infrastructure.• Developing a knowledge culture• Establishing common processes and tools to support informal and formal networks



	<p>within IBM, helping the employees to create, identify, store and use the Intellectual Capital.</p>
Hewlett-Packard	<ul style="list-style-type: none">• Leadership must provide the support and motivation.• Knowledge Management is not a new programme, but a new way of working, so it should be embedded in the business strategy and the organisation design.• Knowledge Management begins with common processes to create and share the knowledge, and is sustained by a knowledge-intensive culture.• Incentives for the people are provided in order to encourage them to share and reuse the knowledge.• Technology is an enabler in the knowledge management, but not the driver.



Appendix B

(Chinese version of the cover letter and questionnaire)

敬爱的女士，先生：

我们是来自瑞典 Kristianstad University 的两名学生，正在写我们的硕士毕业论文。在本论文中，强调了智能资本是公司业绩，竞争优势的主要推动力。在此，知识管理是指公司内发明新产品/新知识，把员工的知识，经验及专门技术显性化，并把这些知识运用于日常运营的所有活动。

在收集数据过程中，我们设计了本问卷调查。此问卷针对“推动跨国公司知识管理重要因素”研究设计，您所提供的资料对本研究相当重要，使本研究能有实务的支持。每一题的目的均在于了解您公司知识管理的真实的状况，答案并无好坏，对错的分别。衷心期盼您依据贵公司的真实情况予以填写，并请您不要遗漏任何一题，以保持这份问卷的完整性，使本问卷能充分反映贵公司的真实情况。

本卷采匿名填答，所有资料将由电脑直接处理，供学术研究之用，不做个别披露，请安心填答。由于您的协助将使本研究更具价值，谨此献上最诚挚的感谢！

请点击以下链接回答本问卷调查（包含三个版本—中文，英文及德语）。

敬祝

身体健康
万事如意

-Jens Neuschl & Yang Yingfei -



以下两个问题是关于贵公司的基本资料：

Q1a: 本公司的所属产业为？

- A. 制造业（如：汽车工业，纺织业）
- B. 服务业（如：咨询业，贸易，银行，保险）
- C. 其他产业

Q1b: 本公司员工总人数为？

- A. > 10000
- B. 5000 – 9999
- C. 2000 – 4999
- D. 500 – 1999
- E. < 499

以下表述/问题关于贵公司的知识管理：

S2a: 本公司重视知识管理，如：发展数据库，建立黄页，进行职员培训等

- A. 完全同意
- B. 基本同意
- C. 没意见
- D. 基本不同意
- E. 完全不同意

S2b: 知识管理的重要性列明在本公司的商业战略上，如：作为公司长期目标，或者是公司任务的一部分

- A. 完全同意
- B. 基本同意
- C. 没意见
- D. 基本不同意
- E. 完全不同意

S2c: 本公司商业策略受知识管理影响的程度

- A. 完全受影响
- B. 部分受影响
- C. 完全不受影响

S2d: 本公司知识管理的目标与员工的个人目标相结合，如：在某个课题上个人为公司的知识数据库做贡献，建立专家网络，个人就某个课题进行演讲，推动在职教育，等

- A. 完全同意
- B. 基本同意
- C. 没意见
- D. 基本不同意
- E. 完全不同意

S2e: 本公司的知识管理活动对本公司的运营有积极的作用，如：减少员工流动率，增加利润，增加员工的积极性及满意指数，提高生产率，促进改革，等

- A. 完全同意
- B. 基本同意
- C. 没意见
- D. 基本不同意
- E. 完全不同意

S3a: 长时间以来，非正式的沟通渠道促进公司员工间的协作，如：不同部门或不同分公司间员工的个人联络

- A. 完全同意
- B. 基本同意
- C. 没意见
- D. 基本不同意
- E. 完全不同意

S3b: 本公司的大多数员工均参与知识管理活动，如：指导新员工，岗位轮换，内部及外部的职业培训，等



A. 完全同意 B. 基本同意 C. 没意见 D. 基本不同意 E. 完全不同意

S3c: 请指出以下这个指数对成功进行知识管理的重要程度：积极与公司其他员工分享知识（包括您的个人经验，等）

A. 非常重要 B. 有点重要 C. 没意见 D. 不是很重要 E. 完全不重要

S3d: 请指出以下这个指数对成功进行知识管理的重要程度：在推动知识管理时，经常性的反馈并讨论

A. 非常重要 B. 有点重要 C. 没意见 D. 不是很重要 E. 完全不重要

S3e: 请指出以下这个指数对成功进行知识管理的重要程度：在知识管理过程中，有很大的积极性，并且参与者相互信任

A. 非常重要 B. 有点重要 C. 没意见 D. 不是很重要 E. 完全不重要

S3f: 请指出以下这个指数对成功进行知识管理的重要程度：高层对知识管理活动的绝对支持，并给予相应的鼓励

A. 非常重要 B. 有点重要 C. 没意见 D. 不是很重要 E. 完全不重要

S3g: 除了以上所列出的影响知识管理效果的因素外，请在下面列出你认为在知识管理中所要考虑的其他因素，并列出的重要程度

如：..... (Please indicate the factor in a note form)

A. 非常重要 B. 有点重要 C. 没意见 D. 不是很重要 E. 完全不重要

如：..... (Please indicate the factor in a note form)

A. 非常重要 B. 有点重要 C. 没意见 D. 不是很重要 E. 完全不重要

如：..... (Please indicate the factor in a note form)

A. 非常重要 B. 有点重要 C. 没意见 D. 不是很重要 E. 完全不重要

Q4a: 在本公司是否有人力资源部门负责本公司的知识管理？

A: 是 B: 否

若你在 **Q4a** 中回答“不是”，请回答 **S4b**.

S4b: 在本公司有专家指导进行知识管理，如：首席知识官，等

A. 完全同意 B. 基本同意 C. 没意见 D. 基本不同意 E. 完全不同意

若你在 **Q4a** 中回答“否”，请回答 **S4c-S4e**



S4c: 本公司的人力资源部经理有能力，也有权利协调本公司的知识管理活动，并为此负责

A. 完全同意 B. 基本同意 C. 没意见 D. 基本不同意 E. 完全不同意

S4d: 在设计知识管理战略是，人力资源部门发挥了很重要的作用，如：提出发展目标和项目计划，在日常运营中执行这个战略，控制知识管理的表现

A. 完全同意 B. 基本同意 C. 没意见 D. 基本不同意 E. 完全不同意

S4e: 当本公司员工在获得某种知识上遇到困难的时候，他们会首先向人力资源部门寻求帮助

A. 完全同意 B. 基本同意 C. 没意见 D. 基本不同意 E. 完全不同意

S5a: 本公司为员工之间的沟通提供了多种正式渠道，如网络，电话，传真，等

A. 完全同意 B. 基本同意 C. 没意见 D. 基本不同意 E. 完全不同意

S5b: 本公司已建立了基础设施以进行知识管理，如：知识数据库，企业内部互联网，知识管理软件，等

A. 完全同意 B. 基本同意 C. 没意见 D. 基本不同意 E. 完全不同意

感谢您的参与！



Appendix C

(German version of the cover letter and questionnaire)

Sehr geehrte Damen und Herren,

wir sind zwei Studenten der Universität Kristianstad in Schweden und schreiben an unserer Master-Abschlußarbeit im Fach Business Administration über Wissensmanagement in international tätigen Unternehmen. Wir definieren Wissensmanagement als einen Managementschwerpunkt der die immateriellen und intellektuellen Ressourcen als die treibende Kraft für den Unternehmenserfolg und Wettbewerbsvorteile betont. In diesem Zusammenhang befaßt sich Wissensmanagement mit sämtlichen Aktivitäten die dazu dienen, neues Wissen zu erzeugen sowie bestehendes Wissen und Erfahrungswerte der Mitarbeiter zu dokumentieren. Dieses Wissen wird dann in Form von Wissensdatenbanken oder Handbüchern/Arbeitsanweisungen anderen Mitarbeitern zugänglich gemacht um im täglichen Arbeitsalltag zum Unternehmenserfolg beitragen zu können.

Das Ziel unserer Arbeit ist es, diejenigen Aspekte zu identifizieren und zu analysieren, die den größten Einfluß auf eine Erfolgreiche Umsetzung von Wissensmanagement in international tätigen Unternehmen haben. Aus diesem Grund führen wir eine Umfrage durch, um unsere Hypothesen diesbezüglich auf ihre Gültigkeit hin zu untersuchen.

Ihre Hilfe wäre sehr wertvoll für diese Untersuchung. Aus diesem Grund würden wir uns sehr freuen, wenn Sie sich für eine Teilnahme an unserer Umfrage entscheiden würden. Das Ausfüllen des Fragebogens nimmt nicht viel Zeit in Anspruch und Ihre Antworten werden anonym behandelt. Der Name des Unternehmens, sowie der Antwortende selbst werden nicht in unserer Arbeit verwendet.

Bitte klicken Sie auf den folgenden Link um zu dem Fragebogen zu gelangen.



Als Gegenleistung für Ihre Teilnahme würden wir Ihnen gern eine Zusammenfassung unserer Ergebnisse zur Verfügung stellen. Sofern Sie daran interessiert sind informieren Sie uns bitte kurz per e-mail und wir werden Ihnen die Zusammenstellung bis Weihnachten zukommen lassen.

Wir bedanken uns im Voraus und verbleiben

Mit freundlichen Grüßen

-Jens Neuschl & Yang Yingfei -



Die folgenden 2 Fragen beziehen sich auf statistische Merkmale Ihres Unternehmens.

F1a: Zu welcher Branche/Industrie gehört Ihr Unternehmen?

- A: Produzierendes Gewerbe, z.B. Software, Automobil, Textil
- B: Dienstleistungsgewerbe, z.B. Beratung, Handel, Banken & Versicherung
- C: Andere

F1b: Wie viele Mitarbeiter sind in Ihrem Unternehmen beschäftigt?

A > 10000 B 5000 – 9999 C 2000 – 4999 D 500 – 1999 E < 499

Die nachfolgenden Aussagen/Fragen beziehen sich auf das Wissensmanagement in Ihrem Unternehmen.

Bitten teilen Sie uns Ihre Einschätzung auf Grund Ihrer Erfahrungen zu den aufgeführten Aussagen/Fragen mit, indem Sie jeweils eines der angegebenen Kästchen unterhalb der Aussagen/Fragen markieren.

A2a: In unserem Unternehmen wird Wissensmanagement ausdrücklich gefördert und praktiziert, z.B. durch Erstellung von Wissensdatenbanken, Gelbe Seiten, Wissenskonzern, Qualitätszirkel, Erfahrungsaustausch, Benchmarking, Diskussionsforen, Interne- und externe Weiterbildung

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut nicht

A2b: Auf die Bedeutung des Wissensmanagement wird ausdrücklich in unserer Unternehmensstrategie- bzw. Philosophie hingewiesen.

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut nicht

F2c: In welchem Umfang ist Ihre Unternehmensstrategie durch das Wissensmanagementkonzept beeinflusst?

- A: sehr stark
- B: teilweise
- C: überhaupt nicht

A2d: Übergeordnete, unternehmensweite Wissensmanagementziele werden auch in persönliche Wissensziele auf Mitarbeiterebene überführt, z.B. in Form von individuellen Beiträgen zur Wissensdatenbank, durch den



gezielten Aufbau von Expertennetzwerken, durch Vorbereitung von
Mitarbeiterseminaren, durch Verfassen von Aufsätzen

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut
nicht

A2e: Wissensmanagementprogramme haben einen positiven Einfluß auf
unseren Unternehmenserfolg, z.B. auf Grund geringerer
Mitarbeiterfluktuation, höherer Gewinn, gesteigerter
Mitarbeitermotivation- und Zufriedenheit, höhere Produktivität, höhere
Innovationstätigkeit

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut
nicht

A3a: In unserem Unternehmen sind verschiedene informelle
Kommunikationskanäle entstanden, z.B. persönliche Netzwerke unter
Kollegen verschiedener Abteilungen oder Tochtergesellschaften.

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut
nicht

A3b: Die meisten Mitarbeiter unseres Unternehmens sind in
Wissensmanagementprojekte eingebunden, z.B. Mentorenprogramme für
Berufsanfänger, Job Rotation, Weiterbildungsmaßnahmen

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut
nicht

A3c: Kennzeichnen Sie bitte die Bedeutung von Einsicht und Bereitschaft der
Mitarbeiter zur Weitergabe ihres Wissens an Kollegen als Bestandteil des
Wissensmanagement.

Sehr wichtig Wichtig Weder/noch Weniger wichtig Unwichtig

A3d: Kennzeichnen Sie bitte die Bedeutung von regelmäßigem Auswertungen
und Diskussionen bzgl. der Umsetzungsfortschritte von
Wissensmanagementprojekten.

Sehr wichtig Wichtig Weder/noch Weniger wichtig Unwichtig



A3e: Kennzeichnen Sie bitte die Bedeutung der Motivation der Mitarbeiter und einer Atmosphäre von Offenheit und gegenseitigem Vertrauen zur erfolgreichen Umsetzung von Wissensmanagementprojekten.

Sehr wichtig Wichtig Weder/noch Weniger wichtig Unwichtig

A3f: Kennzeichnen Sie bitte die Bedeutung der uneingeschränkten Unterstützung und Förderung durch den Vorstand für die Durchführung von Wissensmanagementprojekten.

Sehr wichtig Wichtig Weder/noch Weniger wichtig Unwichtig

A3g: Weitere, bisher nicht genannte Faktoren spielen bei der Umsetzung von Wissensmanagementprojekten eine Rolle.

z.B. (Geben Sie bitte Stichworte an)

Sehr wichtig Wichtig Weder/noch Weniger wichtig Unwichtig

z.B. (Geben Sie bitte Stichworte an)

Sehr wichtig Wichtig Weder/noch Weniger wichtig Unwichtig

z.B. (Geben Sie bitte Stichworte an)

Sehr wichtig Wichtig Weder/noch Weniger wichtig Unwichtig

F4a: Ist in Ihrem Unternehmen die Personalabteilung für Wissensmanagementprojekte verantwortlich?

A: Ja

B: Nein

Falls Sie die Frage mit „Ja“ beantwortet haben setzen Sie bitte den Fragebogen mit den Aussagen A4c – A4e fort, ansonsten beantworten Sie bitte nur A4b.

A4b: Spezielle Ansprechpartner/Experten steuern das Wissensmanagement im unserem Unternehmen, z.B. Wissens Broker, Wissensmanagementbeauftragter.

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut nicht

Nehmen Sie bitte nur zu den nachfolgenden Aussagen Stellung, wenn Sie Frage F4a mit „Ja“ beantwortet haben.



A4c: Die Personalabteilung verfügt über die Möglichkeiten und Befugnisse die Wissensmanagementprojekte innerhalb des Unternehmens zu koordinieren.

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut nicht

A4d: Der Personalabteilung kommt eine wichtige Rolle bei der Erstellung und Umsetzung der Wissensmanagementstrategie zu, z.B. Entwicklung von Zielvorgaben und Projektplänen, Durchführung der Maßnahmen im Arbeitsalltag, Zielüberwachung

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut nicht

A4e: Die Personalabteilung wird als erstes kontaktiert sofern Mitarbeiter beim Zugriff auf bestimmtes Wissen auf Schwierigkeiten stoßen.

Stimme absolut zu Stimme zu Weder/noch Stimmt nicht Stimmt absolut nicht

Vielen Dank für Ihre Teilnahme an dieser Umfrage!



Appendix D

(English version of the cover letter and questionnaire)

Dear Sir or Madam,

We are two students from Kristianstad University, Sweden writing our Master dissertation in Business Administration about Knowledge Management (KM) in multi-national corporations (MNC's). We define KM according to the literature as "*a perspective emphasizing intangible intellectual resources as the prime mover of organizational performance, competitive advantage, and managerial practice*". KM in this context refers to all activities within a company aimed to create, document and store the employee's knowledge, experience and expertise in manuals, databases or work instructions in order to allow other people access to this information and applying this knowledge in the daily operation.

The purpose of our dissertation is to analyse and identify parameters having great managerial importance for a successful implementation of a KM strategy. Therefore we are conducting a survey in order to test whether our hypotheses regarding strategic success factors for KM are valid.

Your help would be very valuable for our project. We would appreciate your participation in our research. Filling in the questionnaire will only take a few minutes and your answers will be completely anonymous. Of course the name of the company as well as the respondent will not be stated in our dissertation.



Please click on and you will be able to fill in the questionnaire.

In return for your participation we would like to offer you a summary of our findings. In case you are interested in this catalogue please send us an e-mail and we will send you the document before Christmas.

Thank you in advance!

Yours sincerely

-Jens Neuschl & Yang Yingfei -



The questionnaire:

The following 2 questions are related to basic data of your corporation.

Q1a: Which industry does your company belong to?

- D. producing industry, e.g. software, telecommunications, automobile, textile)
- E. service industry, e.g. consultant, trade, banking, insurance
- F. other

Q1b: How many people are employed in your company?

- A. > 10000
- B. 5000 – 9999
- C. 2000 – 4999
- D. 500 – 1999
- E. < 499

The following statements/questions are related to Knowledge Management (KM) in your company.

Please indicate according to your own experiences, your opinion on the conditions of Knowledge Management by ticking the boxes below.

S2a: Our company emphasises the importance of KM activities, e.g. development of knowledge databases, installation of yellow pages, conferences, quality circles, communities of best practice, advanced vocational training, benchmarking, discussion forum

- A. Totally agree
- B. Agree
- C. No opinion
- D. Disagree
- E. Totally disagree

S2b: The importance of KM is explicitly stated in our corporate strategy, e.g. as part of the mission statement, as a long-term goal.

- A. Totally agree
- B. Agree
- C. No opinion
- D. Disagree
- E. Totally disagree

Q2c: To what extent is your corporate strategy influenced by the KM concept?

- D. totally influenced
- E. partly influenced
- F. not influenced at all



S2d: Corporate KM goals are transformed into personal objectives for every employee, e.g. contribution to the corporate knowledge database on a specific topic, establishment of a network of experts, preparation of lectures on a specific topic, facilitating training-on-the-job projects, submitting articles or discussion papers on a specific problem.

A. Totally agree B. Agree C. No opinion D. Disagree E. Totally disagree

S2e: KM activities in our company have positive effects on the company, e.g. lower staff turnover rate, higher profit, increased employee motivation and satisfaction indices, increased productivity, increased innovation.

A. Totally agree B. Agree C. No opinion D. Disagree E. Totally disagree

S3a: An informal communications network facilitating the collaboration of our employees has emerged over time, e.g. personal contacts between the employees in different departments or different subsidiaries.

A. Totally agree B. Agree C. No opinion D. Disagree E. Totally disagree

S3b: Most of our employees are involved in KM activities, e.g. mentorship programs for entrants, job rotation, coaching, internal and external professional training, learning communities.

A. Totally agree B. Agree C. No opinion D. Disagree E. Totally disagree

S3c: Please indicate the importance of willingness to share knowledge with other employees as part of successful KM.

A. Very important B. Important C. No opinion D. Less important E. Not important

S3d: Please indicate the level of importance of regular feedback and discussions about the progress in facilitating KM.

A. Very important B. Important C. No opinion D. Less important E. Not important

S3e: Please indicate the level of importance of motivation and mutual trust between the participants in managing knowledge successfully.



A. Very important B. Important C. No opinion D. Less important E. Not important

S3f: Please indicate the level of importance of absolute support and encouragement from the top-management in the KM process

A. Very important B. Important C. No opinion D. Less important E. Not important

S3g: Others than the factors mentioned influencing the implementation of KM projects have to be considered.

e.g. (Please indicate the factor in a note form)

A. Very important B. Important C. No opinion D. Less important E. Not important

e.g. (Please indicate the factor in a note form)

A. Very important B. Important C. No opinion D. Less important E. Not important

e.g. (Please indicate the factor in a note form)

A. Very important B. Important C. No opinion D. Less important E. Not important

Q4a: Is the Human Resource Department (HR) is responsible for KM activities in your company?

A: Yes
B: No

If you chose "Yes" in Q4a, please answer S4c-S4e, otherwise continue with S4b.

S4b: There are special experts in our company guiding the KM process, e.g. Knowledge broker, Chief Knowledge Officer.

A. Totally agree B. Agree C. No opinion D. Disagree E. Totally disagree

Please comment on the following statements only if you chose "Yes" in Q4a!

S4c: The managers of the HR Department have the capacity, authority and responsibility to coordinate the KM activities within the corporation



A. Totally agree B. Agree C. No opinion D. Disagree E. Totally disagree

S4d: The HR department plays an important role in the process of designing the KM strategy, e.g. developing goals and project plans, implementing the strategy in daily business, KM performance controlling.

A. Totally agree B. Agree C. No opinion D. Disagree E. Totally disagree

S4e: The HR Department is always the first choice for the employees asking for help when they encounter barriers to access some specific knowledge.

A. Totally agree B. Agree C. No opinion D. Disagree E. Totally disagree

S 5a: Our company provides every employee access to multiple formal channels of communication, e.g. the internet, telephone, fax.

A. Totally agree B. agree C. no opinion D. disagree E. totally disagree

S 5 b: For the purpose of knowledge management our company has build up a sophisticated technological infrastructure, e.g. knowledge databases, intranet, KM software.

A. Totally agree B. agree C. no opinion D. disagree E. totally disagree

Thank you for your participation in this survey!



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(Jens Neuschl)

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(Yang Yingfei)