Critical barrier and success factors for implementing knowledge management in organisations

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Abstract

Purpose: According to Roth (2003) 40 to 60% of knowledge management projects fail. To date, well-known models such as "Knowledge Spiral" (Nonaka & Takeuchi 1995), "Building Blocks of Knowledge Management" (Probst et al. 1997) and "Munich Model" (Reinemann-Rothmeier 2001) do not provide answers to this extraordinary rate of failure. To successfully implement knowledge management (KM) in companies, it is helpful to deal with critical success and barrier factors. The conducted literature review shows that technical terms are not used uniformly and the importance and influence of critical barrier and success factors seems manifold. Only a few authors define the evaluation of suspected factors in addition to a ranking of barrier or success factors. It seems, however, that for a successful implementation of knowledge management, both factors are of considerable relevance.

Design: An extensive literature review show a clear trend in the ranking, i.e. importance, of critical success factors (CSF) and critical barrier factors (CBF). Based on the frequency and strength of impact of critical factors, an overall assessment for suspected CSF and the collected CBFs was carried out.

Findings: The four identified critical success factors (management support, motivation, measurement and content quality, knowledge management system quality) are distributed across all three sectors or dimensions of knowledge management (technique, organisation and man). Most CSFs belong to the human sector. It is noteworthy that the human range for a successful application is dominated by knowledge. A smaller role is played by the organisational and technical CSFs for successful implementation of knowledge management. With respect to the critical barrier factors "lack of organisation and knowledge culture", "lack of culture trust and transparency" and "lack of culture openness" seem to be of greatest importance which exclusively belong to the human range. Consequently, human and corporate culture play a dominant role for the implementation of knowledge management.

Research limitations/implications: The results of this literature review based on filtering of data generated by special selection of keywords and therefore makes no claim to complete.

Practical implications: The three CSFs and CBFs can act as a list of factors for organisations to succesfully adopt KM. It offers scholars to study those critical factors and develop a common language for KM. In a subsequent empirical study, determined by the literature review, critical factors are to be validated. Depending on the present results, working with corporate culture and human success factors will be considered.

What is original/ what is the value of the paper? This study is the first to provide an integrative comprehensive perspective in technical, organisational and human dimension of CSFs and CBFs for implementing KM in organisations. So far there is no consideration of the technical, organisational and human dimensions of critical factors in business. This paper aims at bridging this gap.
Keywords: critical barrier factors, critical success factors, knowledge management, organisations
Paper type: Literature review

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Introduction

At present time, knowledge is one of the most important resources for companies (Thobe, 2003, 17) to overcome the global challenge (Davenport & Prusak, 1998, 13). Knowledge evolves, if employees develop solutions for appearing problems from their skills, knowledge and abilities (Gerhards & Trauner, 2007, 7). Additional and new knowledge can be accrued, if the company takes care that existing knowledge is linked and is at the employee's proposal. (Herbst, 2000, 10).

The different approaches and solutions used in knowledge management practice cannot provide the expected results for companies (Riempp, 2005, 11). According to Roth (2003), even 40 to 60% of knowledge management projects fail (Roth, 2003, 174). Companies are confronted with problems in practical realisation of knowledge management. According to Gerhards and Trauner (2007) the application of knowledge management is not led to success because of the complexity of knowledge management, absence of concrete practical advises and especially if the factors of success are not considered. Therefore, success or failure of the use of knowledge management depends on the consideration of the determinants (Gerhards & Trauner, 2007, 22).

The established knowledge management approaches in the German-speaking world, like the knowledge spiral by Nonaka & Takeuchi (1995), the block model by Probst et al. (1997) and the Munich model by Reinmann-Rothmeier (2001), do not attend to this problem sufficiently. For this reason, it is advisable to deal with the determinants of knowledge management.

An integral approach of knowledge management in companies could thereby allow companies an expanded structured and logical approach to the better use of knowledge in business by taken not only aspects of information technology but also especially the office political and organisational factors and therefore the dimensions of technology, organisation and man into account. At the same time, success and barrier factors shall be examined.

In literature, the established approaches and previous analyses about determinants in knowledge management do not sufficiently take the successful use of knowledge management in companies into account.

Science literature can only present publications that only deal with success factors or with barrier factors. Only few authors like Martini & Pellegrini (2005) and Picker et al. (2009) cover both areas.

An integral approach in critical success factors and barriers for the dimensions technology, organisation and man cannot be found in an extensive literature research, too.

In addition, only a few authors like Alazmi & Zairi (2003), Kant & Singh (2008), Halawi et al (2008) and Picker et al. (2009) determine a ranking for the factors besides the evaluation of their suspected determinants.

This thesis is aimed at intending critical success and barrier factors in the technological, organisational and human sector for a successful implementation of knowledge management. In this context, a ranking of 909 publications of an extended literature research shall be compiled for the determinants. The compilation of a ranking of factors for success and barriers is reasonable, since not all critical determining factors are relevant

and important. The results should serve as a recommended action for the companies that can concentrate on the essential factors.

First, this paper precedes a detailed literature review. Second, the major themes identified in the papers are discussed and important findings are highlighted. In the last part, a proposed research methodology, conclusions and recommendations for future research are provided.

Definition knowledge management

Since knowledge management can have a different meaning for every company, it is required to fix them for research. A standardised universal definition of "knowledge management" does not exist (Gerhards & Trauner, 2007, 9; Helm et al., 2007, 212) and is therefore seen as reason for conceptional deficits in knowledge management (Güldenberg & Helting, 2004, 523-537). For this reason, a broad definition of knowledge management can be stated in the 909 papers examined for this research, since the authors cannot produce a universal opinion about the concept "knowledge management".

In defining knowledge management in literature, three perspectives can be divided as follows: a human, technology and integrally oriented view (Gassen, 1999, 11-13). The technically oriented concept represents technology as performance data in knowledge management. In the following human oriented view, technology is replaced by man as central factor. The latest integrally oriented view connects the two others and therefore regards the factors man and technology as central performance data. This perspective is used in new approaches of knowledge management, too (Helm, 2007, 213). An integral approach in knowledge management integrates the divisions technology, organisation and employees as well as the enterprise levels individual, group and organisation to an extensive master plan. (Probst et al., 1999; Gassen, 1999, 13). This perspective is also promoted in this research.

By means of the dimensions technology, organisation and man, knowledge management can be defined according to Wilke (1998) as follows: With view of the persons, it is all about the organisation-wide level of the members' competences, education and compliance; regarding to the organisation about creation, use and development of the collective intelligence, sense of community and the concept of togetherness; regarding the technological infrastructure about creation and efficient use of communication and information infrastructure that suit the organisation. In this research, the last mentioned definition of knowledge management is used, since it includes the three dimensions technology, organisation and man.

Literature Review

For the literature research, 909 papers that have been published between 1995 and 2009 have been filtered out by using the literature database EBSCO as well as the search engine Google Scholar. This limitation only bases on the logically coherent selection of English keywords: consisting of a fixed component like "knowledge management" and two variable components as "company", "business", "enterprise", "firm", "organisation" and "organization" on the one hand and "implementation", "use", "commitment",

"application" and "operation" on the other hand. Only papers had been taken into account, which were already published in journals, as well as those, which journals can show a Hirsch index of more than 8. This is necessary, to provide a qualitatively good database of significant paper for a literary analysis.

Now, a narrow choice of 47 articles could be selected, encoded an evaluated for the research question from this database (sample = 47 paper). By this structured procedure, a good database was put for the later literature research.

At first, the database of selected papers is examined and evaluated according to the following criteria: Published paper per annum, distribution of paper by type, percentage distribution of paper by Hirsch index, percentage distribution of paper by size of enterprise, distribution of paper by sector, application area of knowledge management in the analysed paper, target group of interviewed persons and application of models.

- Published paper per annum

It emerges from the examination of published paper per annum, that in the examined period articles to the topic "critical success and barrier factors of knowledge management" have been published permanently but in a dissimilar amount. The interest according to success and barrier factors has increased strongly after the year 2003. This can be based on the fact that the already existing basic models of knowledge management like the knowledge spiral by Nonaka & Takeuchi (1995), the blocks model by Probst et al. (1997) and the Munich model of Reinemann-Rothmeier (2001) cannot provide a solution for the failure of knowledge management projects and that scientists increasingly have to deal with critical success and barrier factors because of the successful implementation of knowledge management in companies.

- Distribution of paper by type

Scientists use an almost evenly conceptional, quantitative and qualitative analytical method when publishing a paper.

- Percentage distribution of paper by Hirsch index

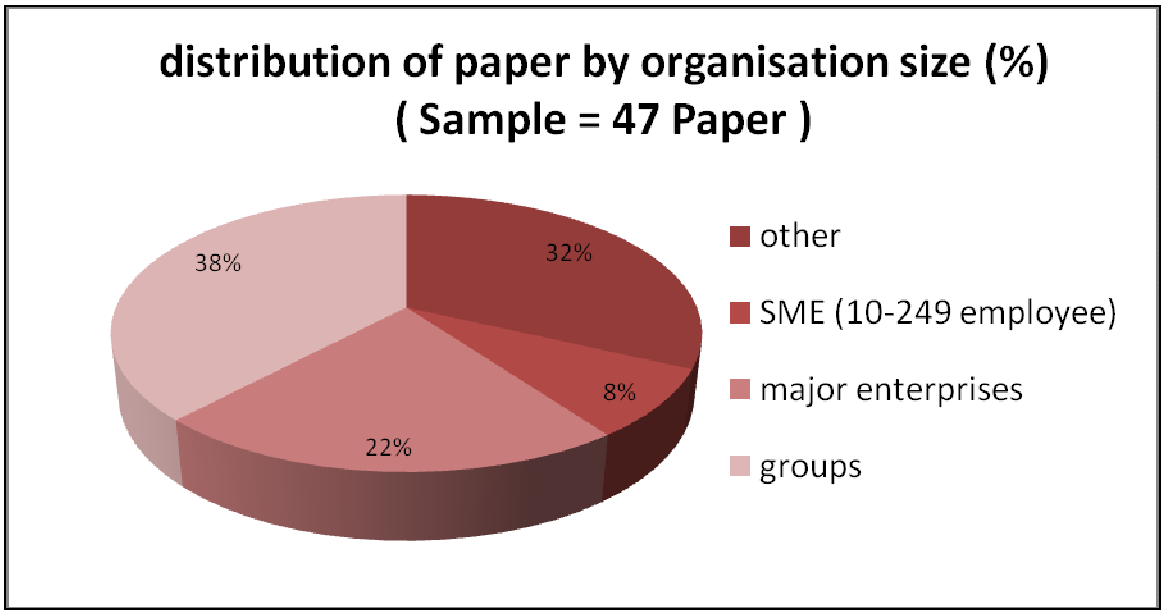
For the literature research, only paper was used, that has been published in journals and can show a Hirsch-Index of more than 8. Provided that paper with an H-Index of more than 40 can be seen as scientifically good publications (Top-Journals), it can be stated that 64% of the examined papers have been taken from good journals. The H-Index analysis of the examined paper show, that the sample of 47 paper used for this literature research are of high quality, suitable for the analysis and provide an excellent database for the literary analysis.

- Percentage distribution of paper by size of enterprise

Almost two-thirds of the examined paper deals with major enterprises and groups. This leads to the conclusion that on the one hand knowledge management is a very young topic for the SMEs and on the other hand major enterprises and groups are still interested to use knowledge management successfully, although

they deal with knowledge management for a long time and have even failed with knowledge management projects.

Figure 1: Percentage distribution of paper by size of enterprise



- Distribution of paper by sector

In the service industry more paper are published than in the industrial sector.

- Application areas of knowledge management at the paper analysed

At use of knowledge management within a company the organisation sector dominates; followed by the application areas Research and Development and Human Research. Therefore, the highest need for knowledge management is seen in the organisation sector. The reason for this is, that carries of knowledge are people and that the organisation of a company has a great influence on the successful application of knowledge management.

- Target group of interviewed persons

For the execution of an empirical study in enterprises, the authors have interviewed users of knowledge management as a target group most, followed by manager and TOP Manager. The rest is split into KM scientists, KM experts, KM responsible persons and KM consultants.

- Application of models

At the examination of influencing factors for a successful application of knowledge management, 41% of scientists do not use a model. 31% of the authors even use their own model. Therefore, the known base models do not play a large role in this topic. At this place it can also be noticed, that the known management approaches for determination of a successful application of knowledge management are not applied.

Proposed Critical Factors in Knowledge Management for organisations

Following, the relevant paper are evaluated according the research question, namely according to the critical success and barrier factors, to be able to establish a ranking of critical influencing factors.
The terms Critical Success Factor (short: CSF) and Critical Barrier Factor (short: CBF) must be explained or defined first. Furthermore, a total portfolio of supposed critical influencing factors is listed according to the articles examined and a classification according to the dimensions technology, organisation and man is carried out at the same time. Furthermore, the most important critical influencing factors are listed.

Definitions of Critical Success Factors (short: CSF) and Critical Barrier Factors (short: CBF)

"Critical Success Factors" and "Critical Barrier Factors" are factors that have a wide influence on success or failure of the application of knowledge management. Therefore, the abbreviations "CSFs" for "Critical Success Factors" and "CBFs" for "Critical Barrier Factors" are used in this paper.
Wong (2009) regards CSFs related to knowledge management as those activities and behaviours, necessary to ensure a successful implementation. CSFs are only internal and not external factors. While the internal factors are subject to controllability by the organisation itself, the external factors are less influenceable when implementing knowledge management (Wong, 2009, 262). Alazmi & Zairi (2003) define CSFs as a restricted number of areas in which satisfactory results are guaranteed for a successful competitive performance (Alazmi & Zairi, 2003, 199). Oakland (1995) summarizes under CSFs a quorum of key factors that a organisation must have to reach a target (Oakland, 1995, 325). Digman (1990) defines CSFs as an area of thinks that must be efficient, in order that the business can grow (Digman, 1990, 247). Kanji & Tambi (1999) state that CSFs are the few thinks that have to go well for a manager and / or an organisation (Kanji & Tambi, 1999, 137).
Sigh and Kant (2008) describe such factors as knowledge management barriers that have a negative effect on the success of implementation (Sigh & Kant, 2008, 141-150). Zyngier (2002) still distinguishes between internal and external barriers. While the internal barriers can be controlled by the organisation, external barriers are not controllable by the organisation (Zyngier, 2002, 919-928).
The considerations in this seminar paper are aimed both on the success as well as on the barrier factors as internal factors in a company. In this case, CBFs are the critical barrier factors that not only restrain a successful implementation but also prevent it.

Total portfolio of 13 CSFs and CBFs based on the literature research divided into human, technological and organisational sectors

Based on the database of 47 paper, the literature research had determined 13 CSFs and CBFs. The 13 CSFs and CBFs culled were assigned to the sectors human, organisation and technology. As known, a majority of the examined success factors depends on organisational questions. In addition, the human behaviour has a

wide influence. In addition, particularly technology takes on a special role because of its numerous possible applications in distribution and application of knowledge management.

The following charts 1 and 2 list the total portfolio of supposed temporary critical success and barrier factors, divided up to technical, organisational and human sectors and summarise the various perspectives of some authors. It is also shown, which author uses which critical factors in his publication.

Chart 1: Total portfolio of 13 CSFs based on the literature research

CSF in the human sector

CSF	Researcher
CSF-1: KM acceptance (acceptability from employee and understanding the role of KM)	Linde(2005), Roth (2003), Masoud und Csanda (2009), Wong (2009), Bishop et al. (2008), Gerhards & Trauner (2007), Kulkarni et al. (2007), Tirpak (2005)
CSF-2: Establish management support	Linde, (2005), Picker et al. (2009), Bishop et al (2008), ten Have et al. (2003) Nikhil (2008), Kant & Singh (2008), Kulkarni et al. (2007), Alazmi et al. (2003), De Long & Fahey (2000),
CSF-3: Communication (individual effective communication of employee's)	Linde (2005), Wang et al. (2007);
CSF-4 Motivation aids (determine suitability of financial and nonfinancial rewards, incentives)	Roth (2003), Richter (2008), Masoud & Csanda (2009), Wong K. (2009), Bishop et al (2008), ten Have et al. (2003), Nikhil (2008), De Long & Fahey (2000), Kant & Singh (2008), Kulkarni et al. (2007), Wang et al. (2007)
CSF-5: Employee's engagement (establish active commitment from employee's for degree of KM use)	Masoud & Csanda (2009), Wong K. (2009), ten Have et al. (2003), Nikhil (2008), De Long & Fahey (2000), Halawi et al. (2008), Kulkarni et al. (2007), Tirpak T. (2005), Alazmi et al. (2003), Wang et al. (2007)

CSF in the organisational sector

CSF	Researcher
CSF-6: KM well planned strategy (alignment of the KM and business strategy)	Linde, F. (2005), Picker et al. (2009), Wong (2009), Bishop et al (2008), Alazmi et al. (2003)
CSF-7: Time pressure	Linde (2005), Wong (2009), Tirpak (2005)
CSF-8: Understand and define KM process	Linde (2005), Wong (2009), Bishop et al (2008), Nikhil (2008), Tirpak (2005), Alazmi et al. (2003), Wang et al. (2007)
CSF-9: Measurement and Content Quality (assessing KM value, Quality of knowledge of various kinds, including its relevance, accuracy, timeliness, applicability, comprehensibility, etc.)	Linde(2005), Masoud & Csanda (2009), Wong (2009), Halawi et al. (2008), Kulkarni et al. (2007), Tirpak (2005), Ook (2006), Picker et al. (2009), Nikhil (2008), De Long & Fahey (2000), Halawi et al.(2008), Kulkarni et al. (2007), Ook L. (2006)

CSF-10: KM responsibility (implement a dedicated person responsible for KM and a supporting team and central coordination)	Linde (2005), Picker et al. (2009), Wong (2009), Bishop et al (2008), Nikhil (2008), Kant & Singh (2008), Tirpak (2005)
CSF-11: Feedback from user for improving the KM quality	Linde (2005), De Long & Fahey (2000), Kulkarni et al. (2007)

CSF in the technological sector

CSF	Researcher
CSF-12: KM System Quality (Includes accessibility (from anywhere/anytime), ease of use, output flexibility to meet the needs, search capability, documentation, etc.)	Linde (2005), Wong (2009), Halawi et al. (2008), Kant and Singh (2008), Kulkarni et al. (2007)
CSF-13: Timely detection of shortcomings	Linde(2005), Halawi et al. (2008), Halawi et al. (2008), Ook (2006)

Chart 2: Total portfolio of 13 CBFs based on the literature research

CBF in the human sector

CBF	Researcher
CBF-1: Lack of organisation and knowledge culture (culture which emphasizes problem seeking and solving)	Linde (2005), Richter (2008), Wong (2009), Kant & Singh (2008), Alazmi et al. (2003)
CBF-2:**Lack of culture openness (openness of communication; frank exchanges between levels in the hierarchy)**	Linde (2005), Wong (2009), De Long & Fahey (2000), Kulkarni et al. (2007): Alazmi et al. (2003), Wang et al. (2007), Ook (2006)
CBF-3: **Lack of culture trust and transparency**	Linde (2005), Roth (2003), Romhardt (1998), Wong (2009), De Long & Fahey (2000), Kant & Singh (2008), Tirpak (2005), Alazmi et al. (2003), Wang et al. (2007)
CBF-4 : **Perceived usefulness of knowledge sharing and creating**	Linde (2005), Roth (2003), Richter (2008), Kulkarni et al. (2007)
CBF-5 : **Overflow of Information**	Linde (2005)

CBF in the organisational sector

CBF	Researcher
CBF-6 : Training and education (Training from employee for KM and Lack of knowledge base, skills, competences)	Linde (2005), Roth (2003), Wong (2009), De Long & Fahey (2000), ten Have et al. (2003)
CBF-7: Lack of time pressure	Linde (2005), Roth (2003), Wong (2009)

CBF-8:Lack of finance for KM	Linde (2005), Gerhards & Trauner (2007), Wong (2009), Tirpak (2005)
CBF-9:Lack of well planned strategy	Linde (2005), Romhardt (1998), Richter (2008), Wong (2009), Nikhil (2008), Kant & Singh (2008)
CBF-10: Human resource management (lack of support from experts and lack of manning, staff retirement and fluctuation of employees)	Linde (2005), Kulkarni et al. (2007), Wong (2009), Kant & Singh (2008), Tirpak (2005)

CBF in the technological sector

CBF	Researcher
CBF-11 : Lack of KM Service Quality (Lack of KM infrastructure, Integrate into organisation and daily live of staff)	Linde (2005), Richter (2008), Wong (2009), Halawi et al. (2008), Kant & Singh (2008), Bishop et al (2008), Alazmi et al. (2003)
CBF-12: User satisfaction	Linde (2005), Wong (2009), Halawi et al. (2008), Kulkarni et al. (2007)
CBF-13: Achieve a balance between people, process and IT	Linde (2005), Roth (2003), Picker et al (2009), Bishop et al (2008), ten Have et al. (2003), Nikhil (2008), Tirpak (2005)

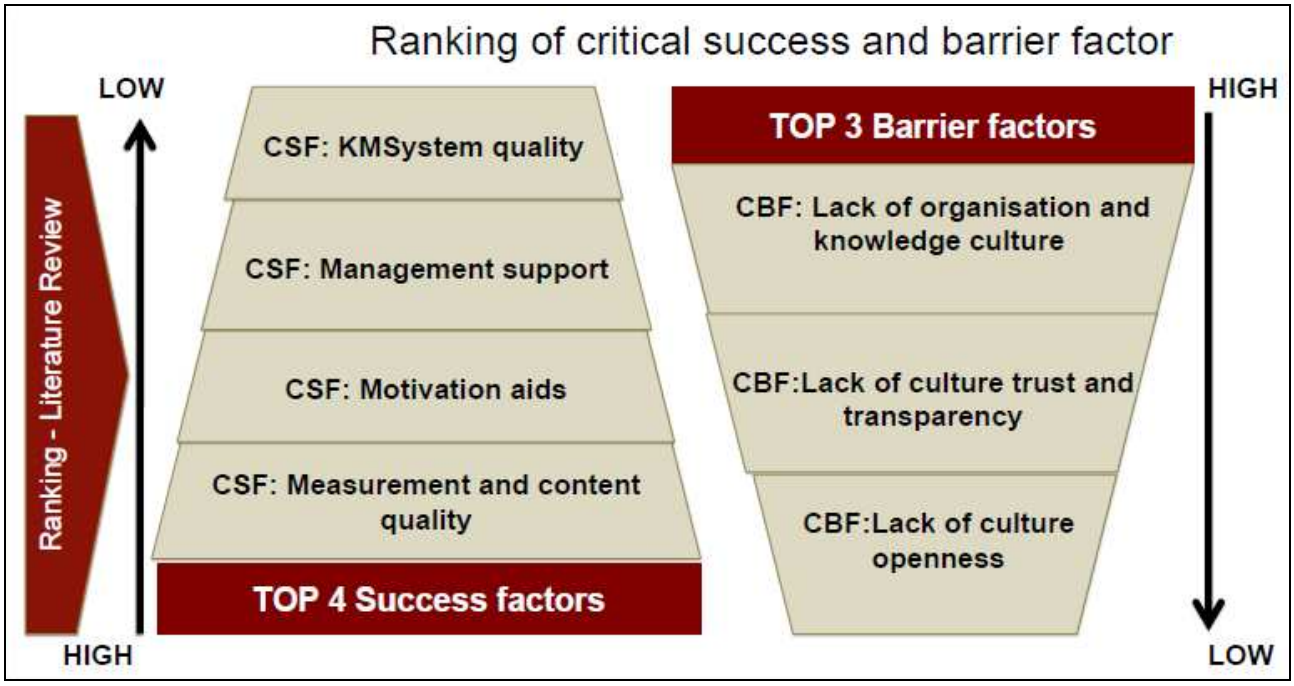
Evaluation according to the criteria frequency and weighting

The 13 predefined CSFs and CBFs are now rated into the database of 47 paper according to the criterion frequency and additionally weighting of a factor. For the determination of a ranking of influencing factors, it is not enough to deals with the frequency of the publication of a factor, but also with the weighting of this factor. The weighting of a factor in an examined paper indicates which influence the factor has on the other factors. By this criterion, the strength of the influence of the examined factor is taken into account and is therefore integrated in the ranking's evaluation. Every factor in a just examined paper is evaluated according the criteria frequency and weighting.

Result of the TOP 4 CSFs and TOP 3 CBFs

The current result in the following illustration already shows clearly that the largest frequency and weighting is on four success factors. The biggest success factor stated so far represents the "measurement and content quality" (CSF-9) in knowledge management. The "motivation" of the own employees (CSF-4) and "management support" (CSF-2) present further important influencing factors and end up on position two and three of the ranking.

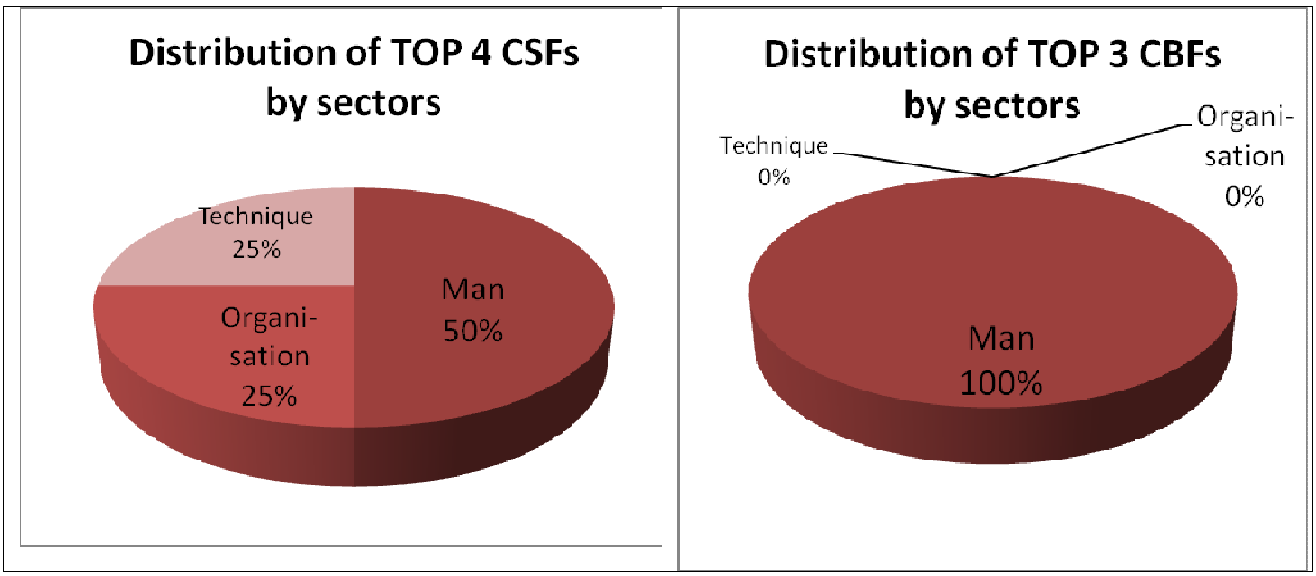
Figure 2: Ranking of critical success and barrier factor



With the barrier factors, however, cultural topics are of great importance.

The four most important CSFs and three CBFs can be divided in the three sectors human, organisation and technology as follows:

Figure 3: Evaluation of the distribution of the TOP 4 CSFs and TOP 3 CBFs by sectors



As can be recognised from the right chart in figure 3 for CBFs, the CBFs have no influence on the technological and organisational barrier factors.

In contrary to CBFs, the success factors take their position in all three sectors. Nevertheless, the factors of the human sector have the widest and at the same time, the most important influence.

As far as the success factors are concerned, it is to be noted that the organisational success factors seem to have an identical influence like the factor in the technological sector.

Basing on results from literature review, it was hypothesized that:

H1: For the successful application of knowledge management, only the barrier factors from the human sector are relevant and must be reduced.

H2: For the successful implementation of knowledge management, success factors from the human sector are dominating.

H3: The success of knowledge management is mainly determined by the critical success factors "measurement and content quality", "motivation aids", "management support" and "KM service quality".

H4: For the failure of knowledge management, mainly the following critical barrier factors are responsible: "lack of organisation and knowledge culture", "lack of culture trust and transparency", "lack of culture openness".

Discussion of results from the literary research

The ranking of factors according to their influence of the application of knowledge management is of great importance for the examination as well as the subsequent evaluation. At the same time, the factor CSF-9 "measurement and content quality" represents the most important identified success factor for the implementation of knowledge management so far. It proves his importance by the high frequency and weighting in the literature research. This factor is also evaluated as a critical success factor by authors like Linde (2005), Masoud & Csanda (2009), Wong (2009), Halawi et al. (2008), Kulkarni et al. (2007) Tirpak (2005) and Ook (2006).

CSF-4 "Motivation aids" appears as second most important factor. Tertiary, the factor "establish management support" (CSF-2) can be named. Like before, this factor is seen as one of the most important determining factor for a successful implementation of knowledge management by many authors today. On this point, see Linde (2005), Picker et al. (2009), Bishop et al. (2008) , ten Have et al. (2003), Nikhil (2008), etc. On fourth place ranks the success factor "knowledge management system quality" (CSF-12).
Also according to Linde (2005) the above-mentioned three of four TOP success factors CSF-9, CSF-2, CSF-12 contribute to the success of knowledge management, while he attaches no importance to the other factors CSF-4 in his study. On the other hand, further authors like Roth (2003), Richter (2008), Masoud & Csanda (2009), Wong (2009), etc., estimate the factor CSF-4 "motivation aids" as one of their most critical influencing factors.

The most important critical barriers for the application of knowledge management are shared by the factors CBF-1 "Lack of organisation and knowledge culture" and CBF-3 "Lack of culture trust and transparency".

CBF-1 is also estimated as a critical factor by the authors Linde (2005), Richter (2008), Wong (2009), Kant & Singh (2008) und Alazmi & Zairi (2003) and CBF-3 by the authors Linde (2005), Roth (2003), Romhardt (1998), Wong (2009), etc.

The factor CBF-2 "Lack of culture openness" is another critical barrier. This statement is confirmed by the authors Linde (2005), Wong (2009), De Long & Fahey (2000), Kulkarni et al. (2007), Alazmi & Zairi (2003), Wang et al. (2007), Ook (2006), Probst et al. (2006) as well as Reinmann-Rothmeier (2001). For this reason, it belongs to the study's three most critical TOP CBFs.

As in case of the CSFs, also in case of the barrier factors no corresponding and consistent ranks in influence on the implementation of knowledge management exist in the examined paper. Bishop et al. (2008) for example uses the success factor CSF-2 "Establishing management support" and uses the phrase "top-level support" (Bishop, 2008, 23).
It is also remarkable that only a few authors like Alazmi & Zairi (2003), Kant & Singh (2008), Halawi et al. (2008) und Picker (2005) set up a rank of the influencing factors.

At the analysis of the results, it has to be stated, that the business culture seems to have a special influence on the factors at the introduction of knowledge management (Bellinger & Krieger, 2007, 35). A further pressure lies also on the attempt, to produce a direct comparison of previous influencing factors by the different concepts used by scientists for these factors.

Proposed Research Methodology

The first aim of the empirical study is to analyse the relation between the critical influencing factors and the success or failure with the implementation of knowledge management. Secondly, it shall be examined, whether correlations exist between the specific determining factors. This study purposely sample organisations by sending out questionnaires survey to user, manager, knowledge worker and so on. For the implementation of the empirical study, online questionnaires are used and hardcopy are sent to the participants.

The Cronbach-Alpha-Analysis is used for the validity of the data collection. The supposed correlation of this data collection between success and failure of knowledge management and the determining factors shall be examined with the regression analysis. The correlation analysis is used for the possible correlation between the influencing factors.

Limitation of results

Since the results are base of a limited view in the literature research, a choice of 909 paper could be determined for the research, due to the query criteria. The filtering of the paper generated a special choice of companies examined. Therefore, an assignment of the results on other companies is permitted only in a limited measure. Therefore, a claim of completeness cannot be claimed.
A further restriction is made by the choice of influencing factors itself. In this study, only the internal factors are examined, on which a company can exert influence on External influencing factors of the organisation's environment are not examined. Therefore, the knowledge gained only applies to the internal processes in a company for the implementation of knowledge management.

Summary and prospect

This research shall contribute a comprehensive examination and determination of the most important critical success and barrier factors for a successful implementation of knowledge management in companies. The cause is delivered by deficits in practice and research. Neither integral nor comprehensive destination of the most important influencing factors for the dimensions technology and human does exist in literature. It is necessary for companies, however, just to focus on the essential factors. The deficit in practice places the focus on the failed projects in knowledge management and makes clear that critical influencing factors at the implementation of knowledge management are not taken into account sufficiently. Thus, a basis is provided to study the critical influencing factors intensively and to carry out a comprehensive literature research.
At the literary analysis, these selected paper were written down in a database and examined according to certain criteria. The first results could be recorded here. It should be mentioned, that the scientific publication to this topic has increased since 2003 and that a need for problem solving still exists in companies. Almost two-thirds of the examined paper deal with major enterprises and groups. By the literature research was also noticed, that the authors do not use consistent standard concepts in choice and relevance of their influencing factors. Bishop et al. (2008) for example uses the success factor CSF-2 "Establish management support" and uses the phrase "top-level support" (Bishop, 2008, 23).
In addition, only a few authors like Alazmi & Zairi (2003), Kant & Singh (2008), Halawi et al (2008) and Picker et al. (2005) determine a ranking for the factors besides the evaluation of their suspected determinants. Most authors, however, only name the influencing factors and examine either the success or the barrier factors. Nevertheless, there are few, like Martini & Pellegrini (2005) and Picker (2005) who had examined both influencing factors. However, it seems to clarify, that both factors are of important relevance for a successful implementation. Because both factors should come to the attention and be taken into account by the management before implementation of knowledge management. For this reason, this study deals with the examination of the possible critical success and barrier factors.
This study's result is based on the previous 47 paper chosen by the literature research. They already show now a clear trend in the ranking of the critical success factors CSFs as well as the critical barrier factors CBFs. Based on the frequency (Amount of paper, in which this factor had been named as influencing factor)

and weighting (strength of the factor's influence on other factors), an overall assessment of the collected supposed CSFs and CBFs was carried out. Due to the dominance of certain critical success and barrier factors, the ranking of CFSs and CBFs was limited on three, to define the essential important influencing factors and to be able to go into their details. The factors, which have a small influence on a successful application of knowledge management and therefore are insignificant, were taken out of the consideration.
"Measurement and content quality" as well as "motivation aids", "establish management support" and "KM service quality" are among the TOP 4 success factors.

These four critical success factors divide on the three sectors or dimensions of knowledge management respectively. The most CSFs belong to the human sector. It is remarkable that the human sector is dominant for a successful application of knowledge management and therefore makes demands that a company's employees have a wide influence on the success of knowledge management. The organisational and technological CSFs have a minor role in implementing of knowledge management.

In case of the critical barrier factors, the factors "Lack of organisation and knowledge culture" and "Lack of culture trust and transparency" are on top of the ranking. "Lack of culture openness" takes on the next, the third, place. It can be determined that the three most important barrier factors are located only in the human sector. Hence, these mentioned human critical barriers have to be reduced before knowledge management is used.
Therefore, man and the business culture take on a dominant role at the critical influencing factors of knowledge management and therefore they have to be paid the highest attention if a successful use of knowledge management is desired.

In a following empiric study, the critical influencing factors that have been determined in the literature research should be validated. Depending on the present results, the work will deal with business culture and the human success factors in the future.

References

Alazmi, M. & Zairi, M: (2003). Knowledge management critical success factors, Total Quality Management and Business Excellence, 199-204.

Bishop, J., Bouchlaghem, D., Glass, J. & Matsumoto, I. (2008). Critical success factors for implementing knowledge management in small and medium enterprises, Journal of Knowledge Management, Vol. 12 (4), 16-29.

Davenport, T.H. & Prusak, L. (1998). Working knowledge - How organisations manage what they know, Boston: Harvard Business School Press.

De Long, D.W. & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management, Academy of Management Executive, Vol. 14 (4), 113-127.

Digman, L.A. (1990). Strategic Management: Concepts, Decisions, Cases, 2nd ed., Homewood.

Gassen, H. (1999). Wissensmanagement - Grundlagen und IT-Instrumentarium, Arbeitspapiere WI Nr. 6/1999, http://geb.uni-giessen.de/geb/volltexte/2004/1628/pdf/Apap_WI_1999_06.pdf. (retrieved January 2010).

Güldenberg, S. & Helting, H. (2004). Wissensmanagement falsch verstanden?: Eine Fortsetzung des Dialoges zur Neuorientierung des Wissensmanagements, Die Betriebswirtschaft, 64. Jg., No. 5, 523–537.

Halawi, L. A., McCarthy, R.V. & Aronson, J.E. (2008). An empirical investigation of knowledge management systems success, Journal of Computer Information Systems, Vol. 48 (2), 121-135.

Helm, R., Meckl, R. & Sodeik, S. (2007). Systematisierung der Erfolgsfaktoren von Wissensmanagement auf Basis der bisherigen empirischen Forschung, Zeitschrift für Betriebswirtschaft, Vol. 77 (2), 211-241.

Herbst, D. (2000). Erfolgsfaktor Wissensmanagement, Berlin: Cornelsen Verlag.

Kanji, G.& Tambi (1999). Total Quality Management in UK Higher Education Institutions, Total Quality Management, 10 (1), 129-153.

Kant, R. & Singh, M.D.(2008). Knowledge management barriers: An interpretive structural modeling approach, Journal of Information & Knowledge Management, Vol. 21 (2), 262-279.

Kulkarni, U., Ravindran, S. & Freeze, R.(2007). A Knowledge Management Success Model: Theoretical Development and Empirical Validation, Journal of Management Information Systems, Vol.23 (3), 309-347.

Linde, F. (2005). Barrieren und Erfolgsfaktoren des Wissensmanagements, http://www.fbi.fh-koeln.de/institut/papers/kabi/band.php?key=58. (retrieved June, 2009).

Martini, A. & Pellegrini, L. (2005). Barriers and levers towards knowledge management configurations, Journal of Manufacturing Technology Management, Vol. 16 (6), 670-681.

Masoud, H. & Csanda, C.M. (2009). The Effectiveness of Communities of Practice: An Empirical Study, Journal of Managerial Issues, Vol. 21 (2), 262-279.

Nikhil, M. (2008). Successful knowledge management implementation in global software companies, Journal of Knowledge Management, Vol. 12 (2), 42-56.

Nonaka, I. & Takeuchi H. (1997). Die Organisation des Wissens, Frankfurt/New York: Campus Verlag.

Oakland, J.S. (1995). Total Quality Management, Oxford: Butterworth-Heinemann.

Ook, L. (2006). Psychological Barriers to Maintaining Knowledge Management Systems, cyberpsychology and behavior, Vol. 9 (3), 367-368.

Picker, S., Ruhnke, A. & Leker, J. (2009). Developing knowledge management – what makes the success?, International Journal of Technology Management, Vol. 0 (0), 1-10.

Probst, G., Raub, S. & Romhardt, K. (1997). Wissen managen: wie Unternehmen ihre wertvollste Ressource optimal nutzen, 2. Auflage, Wiesbaden: Gabler Verlag.

Probst, G., Raub, S. & Romhardt, K. (2006). Wissen managen: wie Unternehmen ihre wertvollste Ressource optimal nutzen, 5. Auflage, Wiesbaden: Gabler Verlag.

Reinmann-Rothmeier, G. (2001), Forschungsbericht Nr.131, Wissen managen: Das Münchener Modell, Ludwig-Maximilians-Universität, Lehrstuhl für empirische Pädagogik und Pädagogische Psychologie.

Reinmann-Rothmeier, G. (2001). Wissen managen: Das Münchener Modell, http://www.wissensmanagement.net/download/muenchener_modell.pdf. (retrieved June, 2009).

Reinmann-Rothmeier, G., Mandl, H. (2000). Epilog: Ausblick auf ein Kompetenz-Zentrum, in: Mandl, Heinz/ Reinmann-Rothmeier, Gabi (Hrsg.): Wissensmanagement, München/Wien/Oldenburg: Oldenburg Wissenschaftsverlag.

Richter, A. (2008). IT-gestütztes Wissensmanagement: Theorie, Anwendungen und Barrieren; 2. Auflage, Berlin: Volker Derballa Verlag.

Riempp, G. (2005). Integriertes Wissensmanagement – Strategie, Prozesse und Systeme wirkungsvoll verbinden, HMD – Praxis der Wirtschaftsinformatik, 42. Jg., Heft 246, 6-19.

Romhardt, K. (1998). Die Organisation aus der Wissensperspektive - Möglichkeiten und Grenzen der Intervention, Wiesbaden: Gabler Verlag.

Roth, S. (2003). Wissensvernetzung und lernende Organisationen in: Bsirske, F., Endl, H.-L., Schröder, L. & Schwemmle, M. (Hrsg.). Wissen ist was wert. Wissensmanagement, Hamburg: VSA-Verlag, 166-175.

Sigh, M. D. & Kant, R. (2008). Knowledge management barriers: An interpretive structural modeling approach, Journal of Information & Knowledge Management, 141-150.

Tirpak, T.M. (2005). Five Steps to effective Knowledge Management, Research Technology Management, 15-16.

ten Have, S., ten Have, W., Stevens, F. & ven der Elst, M. (2003). Key Management Models, London: Prentice-Hall, Financial Times.

Thobe, W. (2003). Externalisierung impliziten Wissens, Band, Frankfurt am Main: Europäischer Verlag der Wissenschaften.

Wang, C.-H., Lee, Y.-D, Lie, W.-I. & Zhou, L.-T. (2007). Effects of Personal Qualities and Team Processes on Willingness to Share Knowledge: An Empirical Study, International Journal of Management, Vol. 24 (2), 250-256.

Willke, H. (1998). Systemisches Wissensmanagement, Stuttgart: Lucius und Lucius Verlag.

Wong, K.Y. (2009). Critical success factors for implementing knowledge management in small and medium enterprises, Industrial Management und Data Systems, 261-279.

Zyngier, S. (2002). Knowledge management obstacles in australia, Proc. of 10th European Conference on Information Systems, 919-928