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Competence-Based IT Outsourcing – An Evaluation of Models for Identifying and Analyzing Core Competences

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ABSTRACT

In an effort to re-focus on their core competences, an increasing number of companies outsource parts of their IT services. In this context, based on Hamel and Prahalad's definition of core competences, numerous theoretical models for identifying and analyzing core competences were developed. However, at present, due to the high complexity of outsourcing decisions, it is not clear which theoretical models can support decision-makers and to what extent these models can make a contribution. To address these questions, theoretical models for identifying and analyzing core competences, suitable for supporting IT outsourcing decisions in general, are identified, and systematically classified within a framework. Based on the developed classification, one model of each model category is evaluated on the basis of a list of six criteria.

Keywords

Information Technology, Outsourcing, Core Competences, Theoretical Models, Evaluation

INTRODUCTION

From the perspective of numerous companies, IT loses in strategic importance. Particularly CEOs often have problems with recognizing the value added spent by IT, resulting in drastically reduced IT budgets. But also some CIOs do not consider IT as a strategic investment any more (Habler, 2004). This development can be seen as a major reason for the worldwide IT outsourcing trend. While re-concentrating on their core competences, companies outsource commodity services. In addition, enabled by technological advances and decreasing telecommunication costs, potential cost savings by relocating IT services to low-wage countries like India, Russia etc. – the so called IT offshoring – even fortified this trend.

In practice, however, companies often cannot tap the existing potentials IT outsourcing has to offer. In 2005, according to an estimation of neoIT (East Bay Business Times, 2005), 40 percent of all outsourcing projects were not completed successfully. With regard to IT offshoring, even one in three projects failed (McCue, 2004). To some extent, the high failure rate can be traced back to an inadequate project management. However, if the wrong services are selected for outsourcing from the beginning, it is an indicator for an insufficient decision process. Within this process, decision-makers often refer to their companies' core competences.

Hamel and Prahalad (1990) introduced the concept of core competences in strategic management. They define core competences as *“the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies.”* (p. 82). To identify core competences, they propose to check the following three characteristics:

- *“First, a core competence provides potential access to a wide variety of markets.”* (p. 83)
- *“Second, a core competence should make a significant contribution to the perceived customer benefits of the end product.”* (p. 84)
- *“Finally, a core competence should be difficult for competitors to imitate.”* (p. 84)

Based on Hamel and Prahalad's definition of core competences, numerous theoretical models for identifying and analyzing core competences were developed. Some of these models also explicitly refer to IT outsourcing (e. g., Lacity and Willcocks,

2001), while most of these models are more general (e. g., Boos and Jarmai, 1994), not focusing on outsourcing. Considering these general models, some research has been carried out with respect to models that can support the identification of core competences (Rose, 2000; Bouncken, 2000; Zehnder, 1997). However, at present, it is not clear which of these theoretical models (both general and outsourcing-specific) are suitable for competence-based IT outsourcing decisions and to what extent these models can make a contribution to support the decision process.

In an attempt to identify suitable models and to better understand the contribution of these models, an extensive literature review was conducted. Databases of published works and conference proceedings were searched for articles, dealing with the “IT Outsourcing Decision” and/or “Core Competences”. In a next step, the identified models were systematically classified and evaluated. The identification, classification, and evaluation of these models is guided by the scope of the research project RAMSES, which is carried out in cooperation with a German multinational company. Within this project, it is assumed that, by outsourcing an IT service, a company is trying to re-concentrate on its core competences. Therefore, the following evaluation is limited to models, addressing competence-based IT outsourcing decisions.

The paper is organized as follows: In the first part of the paper, a classification framework for the identified models is presented. In the second part, in order to ensure a structured and consistent basis of evaluation, a framework, comprising six criteria, is introduced. In the third part, based on the developed classification and the evaluation framework, one theoretical model of each model category is evaluated. Finally, strengths and weaknesses of the considered models are summarized in the last part of the paper.

CLASSIFICATION FRAMEWORK

Within the literature research, 23 theoretical models for identifying and analyzing core competences have been examined, of which eleven models are suitable for supporting IT outsourcing decisions in principle. According to the underlying “*theoretical concept*” of the identified models, we distinguish between the following five model categories:

- Predetermined Lists
- Portfolio-based Models
- Resource-based Models
- Knowledge-based Models
- Indicator-based Models

Table 1 describes the specific characteristics of each single model category and lists examples for each category.

Model Category	Characteristics	Models (examples)
Predetermined Lists	<ul style="list-style-type: none"> • Recommendation of predetermined core IT capabilities. • Models within this category refer directly to IT functions and IT processes. 	<ul style="list-style-type: none"> • Core IT Capabilities Framework by Lacity and Willcocks (2001) • Core IS Capability Domain by Feeny and Willcocks (1998) Etc.
Portfolio-based Models	<ul style="list-style-type: none"> • Standardized model for strategic decisions. • Consideration of external and internal information within the analysis. 	<ul style="list-style-type: none"> • Portfolio of Competences by Friedrich, Handlbauer, Hinterhuber, and Stuhec (1996) • Business Factors Matrix by Lacity and Willcocks (2001) • Model by Hinterhuber and Stuhec (1997) Etc.
Resource-based Models	<ul style="list-style-type: none"> • Based on the assumption that different resources and their combination result in competitive advantage. • Important instrument of these models is the analysis of internal strengths and 	<ul style="list-style-type: none"> • VRIO Framework by Barney (2002) • Skill Mapping and Skill Cluster Analysis by Edge, Hiscocks, Klein, and Plasonig (1995) and Edge, Kass, and Klein (1991)

	weaknesses.	Etc.
Knowledge-based Models	<ul style="list-style-type: none"> Based on the assumption that knowledge is the most valuable source of competitive advantage. Differentiation between implicit and explicit knowledge. 	<ul style="list-style-type: none"> Model by Boos and Jarmai (1994) Model by Homp and Krüger (1997) Etc.
Indicator-based Models	<ul style="list-style-type: none"> Intention of these models is to describe and to operationalize theoretical phenomena. Definition of indicators for identifying core competences. 	<ul style="list-style-type: none"> Model by Faix and Kupp (2002) Evaluation of Innovative Technologies by Pfeiffer and Weiss (1995) Etc.

Table 1. Overview of Model Categories

Due to the scope of the RAMSES research project, the evaluation is limited to models which are based on the concept of core competences (Hamel and Prahalad, 1990) and the resource-based view (Barney, 1991) respectively. Other theoretical concepts influencing outsourcing decisions, e. g., the theory of transaction costs (Williamson, 1986), will not be considered within this paper.

Furthermore, it has to be added that the classification is not completely selective. However, as confirmed by practitioners, the classification covers the major characteristics of the different models considered within this paper.

EVALUATION FRAMEWORK

At present, it is not clear to which extent the identified models can support companies by making outsourcing decisions. Therefore, in an attempt to measure the contribution of these models, within the RAMSES research project, a list of six evaluation criteria was developed. Table 2 describes each single criterion in more detail.

	Criterion	Description	Evaluation Scale
Content-related Criteria	Company Orientation	To what extent does a model take into account the environmental conditions and company-specific challenges?	<u>Max.</u> : Automatic consideration of company characteristics. ... <u>Min.</u> : Non-consideration of company characteristics.
	Customer Orientation	To what extent does a model consider the customer value of potential core competences?	<u>Max.</u> : Consideration of customer value by surveys. ... <u>Min.</u> : Non-consideration of customer value.
	Future Orientation	To what extent does a model include possible future developments?	<u>Max.</u> : Dynamic (based on prognoses). ... <u>Min.</u> : Static (based on past values).
Form-related Criteria	Objectivity	How objective is a model?	<u>Max.</u> : Analysis based on several, internal and external opinions. ... <u>Min.</u> : Analysis based on one, internal opinion.
	Measuring Support	To what extent does a model propose methods or instruments for measuring core competences?	<u>Max.</u> : Specification of complete measuring process. ... <u>Min.</u> : Non-specification of measuring

			methods.
	Effort	How time-, labor-, and cost-extensive is the application of a model?	<u>Max.</u> : Large number of complex analytical steps. ... <u>Min.</u> : Small number of simple analytical steps.

Table 2. Overview of Evaluation Criteria

Whereas the first three criteria (customer orientation, future orientation, and company orientation) deal with the content of the models, the last three criteria (objectivity, measuring support, and effort) focus on the form of the models.

With regard to the presented list of criteria, it has to be added that, to some extent, the criteria depend on one another.

EVALUATION OF MODELS FOR IDENTIFYING AND ANALYZING CORE COMPETENCES

Based on interviews with representatives of our cooperation partner, the evaluation criteria presented above have been applied to selected models for identifying and analyzing core competences. Here, five models, one model representing each model category identified (compare to Table 1), have been evaluated.

Core IT Capabilities Framework by Lacity and Willcocks (2001)

The Core IT Capabilities Framework by Lacity and Willcocks (2001) is categorized as a “Predetermined List”. It is specifically developed for IT outsourcing decisions and is based on the concept of the Nine Core IS Capabilities by Feeny and Willcocks (1998). According to their research, a company is in need of the nine capabilities, presented in Figure 1.

Based on the Nine Core IS Capabilities by Feeny and Willcocks (1998), Lacity and Willcocks (2001) recommend that business systems thinking, relationship building, leadership, informed buying and contract facilitation “*are the priorities for in-house resourcing*” (p. 278), as these capabilities represent the basis for an ongoing orientation on business operations.” In contrast, according to Lacity and Willcocks (2001), architecture planning, making technology work, vendor development, and contract monitoring may be relocated to a preferred supplier, providing “*a check and balance on the contractors to whom service provision has been ‘outsourced’*” (p. 278).

With regard to the content-related evaluation criteria, in contrast to other models, the Core IT Capabilities Framework by Lacity and Willcocks (2001) does not at all include company-specific competences, and does not mention the inclusion of customers in the identification process. In addition, the consideration of future trends is not explicitly mentioned within this model.

Considering the form-related criteria, the Core IT Capabilities Framework by Lacity and Willcocks (2001) does neither provide an indication of nor does it exclude the inclusion of externals. Therefore, the criterion “Objectivity” cannot be applied to this model. Furthermore, due to the predetermined list of core competences, no measuring support is needed. However, in terms of effort, the Core IT Capabilities Framework by Lacity and Willcocks (2001) is leading. As a result of the predetermined list of core competences, the labor-extensive identification process, which causes considerable efforts for data collection and analysis, can be avoided.

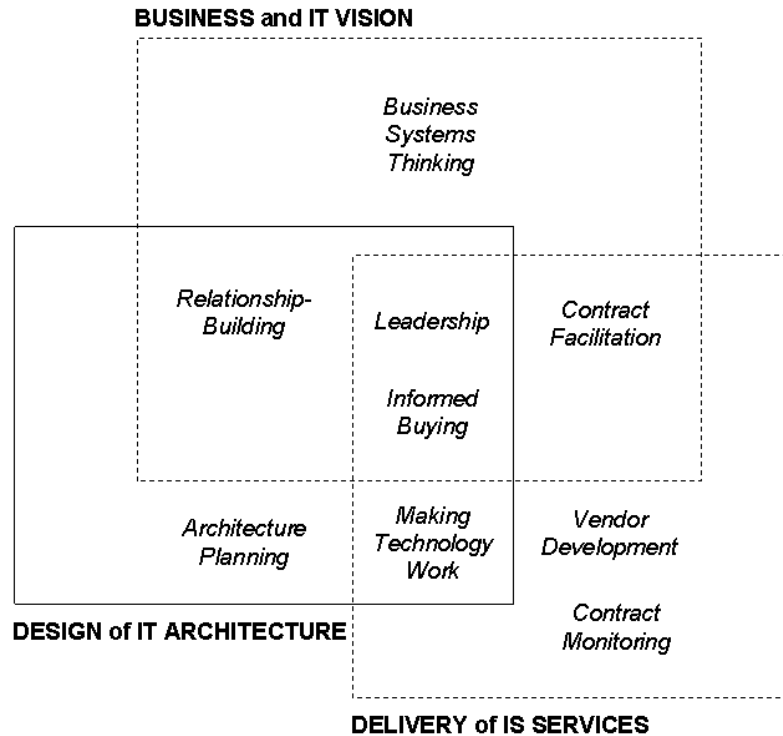


Figure 1. Nine Core IS Capabilities
(Feeny and Willcocks, 1998)

Portfolio of Competences by Friedrich et al. (1996)

The approach by Friedrich et al. (1996) is categorized as a "Portfolio-based Model". As dimensions, the model considers the "Customer Value" from a market-related perspective, and the "Relative Competence Strength" from a company-related perspective.

According to their approach, Friedrich et al. propose the following steps for identifying a company's core competences:

- The analysis of existing competences
- The identification of the relative strength of core competences
- The identification of the customer value of core competences
- The development of the *Portfolio of Competences*

In addition, in an attempt to support the procedure outlined above, the authors propose supplementary activities (e. g., the inclusion of externals).

Finally, the considered competences are positioned in the portfolio, consisting of four quadrants (see Figure 2).

- **Competence Standards**

Competences within this category do not create a competitive advantage.

- **Competence Potential**

With regard to these competences, the company possesses a competitive advantage; even though, this advantage does not increase the customer value.

- **Competence Gaps**

For competences within this category, there is a discrepancy "between what the market demands (competence requirements) and what the enterprise is able to do (existing in-house competence)" (Friedrich et al., 1996, p. 231).

- **Core Competences**

Competences, classified as core competences, determine the corporate profile.

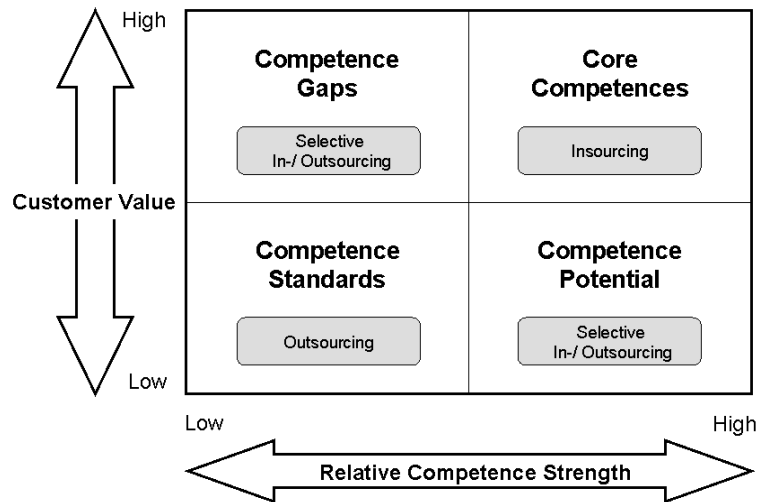


Figure 2. Portfolio of Core Competences
(Friedrich et al., 1996)

Based on the position of a competence in the portfolio, Hinterhuber and Stuehec (1997) recommend different actions (see Figure 2).

Requiring the collection of company-specific information (e. g., information about the customer value of a company's products), the Portfolio of Competences by Friedrich et al. (1996) meets the criterion "Company Orientation". With regard to the other content-related criteria, due to its dimension "Customer Value", which has a direct impact on the evaluation of the competences, the model includes the customer in the identification process. In addition, within the model, competences are evaluated dynamically in reference to their past, present, and future importance (Hinterhuber and Stuehec, 1997). However, the model gives no specific information about the collection and the analysis processes concerning future data.

With reference to the form-related criteria, Friedrich et al. (1996) recommend "discussions with internal and external key-persons, customers and knowledgeable observers of an industry" (p. 228) for analyzing existing competences. Moreover, besides an analytical framework, the model provides instruments (e. g., the competence deployment), and specifies the handling of these instruments (e. g., evaluation scales). In addition, the model by Friedrich et al. (1996) requires extensive information. For applying their model, Friedrich et al. (1996) propose analyses from different perspectives: company, environment, industry, and customer.

VRIO Framework by Barney (2002)

The VRIO Framework by Barney (2002) is categorized as a "Resource-based Model". Within this model category, especially the definition of the term "resource" poses a considerable challenge. Barney (2002) defines resources as "all assets, capabilities, competences, organizational processes, firm attributes, information, knowledge, and so forth that are controlled by a firm and that enable the firm to conceive of and implement strategies designed to improve its efficiency and effectiveness" (p. 155).

In an attempt to identify a company's strengths and weaknesses, Barney (2002) developed the VRIO framework. This framework is based on the following four questions:

- **Question of Value:** "Do a firm's resources and capabilities enable the firm to respond to environmental threats or opportunities?" (p. 160)
- **Question of Rarity:** "Is a resource currently controlled by only a small number of competing firms?" (p. 160)
- **Question of Imitability:** "Do firms without a resource face a cost disadvantage in obtaining or developing it?" (p. 160)
- **Question of Organization:** "Are a firm's other policies and procedures organized to support the exploitation of its valuable, rare, and costly to imitate resources?" (p. 160)

On the basis of these questions, a company can specify whether a resource or a capability represents a strength or a weakness. Figure 3 gives an overview:


<i>Is a resource or a capability...</i>				
Valuable?	Rare?	Costly to Imitate?	Exploited by Organization?	Strength/Weakness
No	---	---	No	Weakness
Yes	No	---		Strength
Yes	Yes	No		Strength and distinctive competence
Yes	Yes	Yes	Yes	Strength and distinctive sustainable competence

Figure 3. Relationship between the VRIO Framework and Organizational Strengths and Weaknesses (Barney, 2002)

According to Barney (2002), only a company’s distinctive sustainable competences can “generate a sustained competitive advantage and above-normal economic profits” (p. 174).

In respect of the content-related evaluation criteria, requiring the collection of company-specific information, the VRIO Framework by Barney (2002) is company-oriented. However, the model does not mention the inclusion of customers during the identification process. Furthermore, within his model, Barney (2002) addresses future changes in conjunction with the analyzed resources. Even though, no detailed information about the collection and the analysis of future data is given.

Relating to the form-related criteria, the VRIO Framework by Barney (2002) considers external conditions for analyzing a company’s strengths and weaknesses. However, the inclusion of external information and opinions (e. g., by customer or supplier surveys, interviews with experts etc.) is not explicitly mentioned. Additionally, first of all, the VRIO Framework by Barney (2002) represents an analytical framework. Therefore, the author does not propose specific methods or instruments for the correct application of his model. With regard to the efforts required for applying this model, extensive information is required. The model comprises four key questions which cannot be answered without a comprehensive data analysis.

Model by Boos and Jarmai (1994)

Boos and Jarmai (1994) assume that managing a company’s knowledge could become a decisive factor for its future competences. Therefore, their model is categorized as a “Knowledge-based Model”.

Boos and Jarmai (1994) recommend the conversion of implicit knowledge in explicit knowledge as well as the conversion of external knowledge in internal knowledge. Here, the authors define five starting points for identifying a company’s core competences (also see Figure 4):

- Persons and departments
- Products
- Customers and suppliers
- Benchmarks
- Future trends

According to Boos and Jarmai (1994), the identification process within each area mentioned above is divided into five steps. Within these steps, the authors predominantly recommend interviews and workshops with internal and external experts.

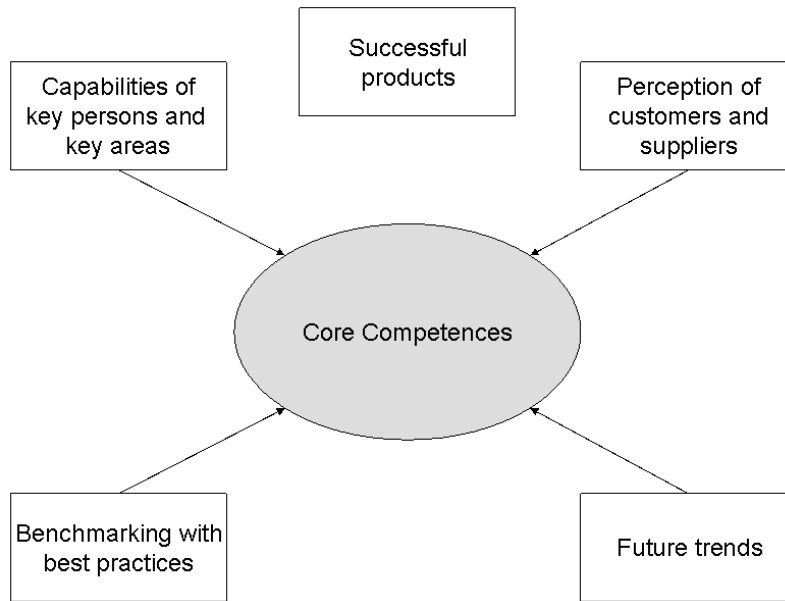


Figure 4. Access to Core Competences (Boos and Jarmai, 1994)

Requiring the collection of company-specific information, the model by Boos and Jarmai (1994) fulfills the criterion “Company Orientation”. With regard to the other content-related evaluation criteria, Boos and Jarmai (1994) include the customer in the identification process by referring explicitly to customer surveys. In addition, the consideration of future trends is heavily emphasized in Boos’ and Jarmai’s model, as a separate analytical section is defined for future developments.

Regarding the form-related criteria, the model by Boos and Jarmai (1994) includes an explicit section “Customers and Suppliers” which is based on external information. Therefore, within this model, the inclusion of external opinions is given. Even though, Boos and Jarmai (1994) provide general instruments (e. g., benchmarks, workshops, and interviews), they do not describe the application of these instruments with regard to the analysis of a company’s core competences. In terms of the criterion “Effort”, the application of the model by Boos and Jarmai (1994) causes high efforts. The authors recommend 25 steps, mainly based on workshops and interviews, for identifying core competences. The reason for this huge number of intermediate steps is the strong focus on knowledge, primarily available in the form of external and implicit knowledge.

Indicators for Operationalizing Core Competences by Faix and Kupp (2002)

According to the concept of Hamel and Prahalad (1990), Faix and Kupp (2002) define indicators for identifying core competences. Consequently, the model is categorized as an “Indicator-based Model”.

The authors use a dimensional analysis to develop indicators. In a first step, they choose valid, independent, characteristic dimensions:

- Not to imitate
- Not to substitute
- Perceived benefits

In a second step, they develop indicator groups for any of these dimensions and specify single indicators (see Table 3).

Dimension	Indicator Group	Indicator (examples)
Not to imitate	Legal indicators	Patents
	Temporal indicators	Expenses for the development of competences
	Knowledge-specific indicators	Degree of personal knowledge
	Cost-specific indicators	Costs of imitation

Not to substitute	Technological indicators	Patent applications of competitors
	Temporal indicators	Duration of development
	Knowledge-specific indicators	Information redundancies
	Cost-specific indicators	Degree of complexity
Perceived benefits	Cost-specific indicators	Loyal suppliers
	Output-specific indicators	Reputation

Table 3. Indicators for Operationalizing Core Competences (Faix and Kupp, 2002)

In a third step, Faix and Kupp (2002) establish a connection amongst the indicators and weight the indicators. For evaluating the identified indicators, the authors suggest the analysis of processes or projects as well as surveys with customers.

With respect to the content-related evaluation criteria, the adaptation of the model by Faix and Kupp (2002) to company-specific characteristics is possible by adding individual indicators. However, this results in additional effort. In addition, the model includes the customer in the identification process by customer surveys etc. However, future trends are not explicitly considered within this model.

With regard to the form-related criteria, the model by Faix and Kupp (2002) recommends the inclusion of external opinions. Within the dimension “Perceived Benefits”, Faix and Kupp (2002) define so called “Output-specific indicators”, measured by external surveys. Furthermore, even though, the model by Faix and Kupp (2002) defines numerous indicators for the identification process, the information about the measuring process is not always clear. As a result, during the application of this model, the users should scrutinize the quality of the measuring process in regular intervals. Moreover, proposing a large number of indicators, which should be taken into account, applying the model by Faix and Kupp (2002) causes high efforts. Additionally, by adapting the model to company-specific characteristics, the number of indicators can even increase.

CONCLUSION

At present, it is not clear which theoretical models for identifying and analyzing core competences can make a contribution to competence-based IT outsourcing decisions and to what extent these models can support the decision process. Therefore, theoretical models, applicable to IT outsourcing decisions in general, were identified and systematically classified. Based on the classification, one model of each model category was evaluated according to a list of six criteria. The summary of the evaluation process is presented in Table 4.

	Model	Content-related Criteria			Form-related Criteria		
		Company Orientation	Customer Orientation	Future Orientation	Objectivity	Measuring Support	Effort
Pre-determined Lists	Core IT Capabilities Framework by Lacity and Willcocks (2001)	low	low	low	n. a.	n. a.	low
Portfolio-based Models	Portfolio of Competences by Friedrich et al. (1996)	medium to high	high	medium	high	medium to high	medium to high
Resource-based Models	VRIO Framework by Barney (2002)	medium to high	low	medium to high	low to medium	low to medium	medium to high

Knowledge-based Models	Model by Boos and Jarmai (1994)	medium to high	high	high	high	low to medium	high
Indicator-based Models	Indicators for Operationalizing Core Competences by Faix and Kupp (2002)	medium	high	low	high	medium	high

Table 4. Summary of Model Evaluation

Considering the Core IT Capabilities Framework by Lacity and Willcocks (2001), especially the low effort for applying this model has to be mentioned. However, by using this model other weaknesses have to be accepted (e. g., non-consideration of company-specific aspects). In contrast to Lacity's and Willcocks' model, the models by Friedrich et al. (1996), by Barney (2002), and by Boos and Jarmai (1994) include company-specific characteristics. Here, the collection of information depends on the analyzed company (e. g., information about the customer value of a company's products or information about the relevance of a company's IT activities).

With regard to the customer orientation and the objectivity of the evaluated models, the models by Friedrich et al. (1996), by Boos and Jarmai (1994), and by Faix and Kupp (2002) rank first. All of these models include external opinions during the identification process. However, the inclusion of externals results in the high effort required for applying these models.

Concerning almost all considered models, particularly the lack in methodical support became apparent within the evaluation. In this context, only models, predefining specific IT activities as core competences (see model category "Predetermined Lists"), can be excluded from this point of criticism. Consequently, in an attempt to facilitate the handling of the theoretical models presented within this paper, especially in the field of measuring support, further improvements are necessary.

In a next step, the evaluation of the models has to be validated with empirical studies. However, already now, it can be said that a need for corresponding models, tailored to IT outsourcing decisions, exists.

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