

THE POTENTIAL AND CHALLENGES OF ECM SYSTEMS: A CONCEPTUAL ANALYSIS

Randi Vindegg, Norwegian School of Economics and Business Administration, Helleveien 30,
NO-5045 Bergen, Norway, randi.vindegg@nhh.no

Anna Mette Fuglseth, Norwegian School of Economics and Business Administration, Helleveien
30, NO-5045 Bergen, Norway, anna.mette.fuglseth@nhh.no

Kjell Grønhaug, Norwegian School of Economics and Business Administration, Helleveien 30,
NO-5045 Bergen, Norway, kjell.gronhaug@nhh.no

Abstract

The purpose of this paper is to enhance the understanding of how Enterprise Contract Management (ECM) systems may improve contract management. After the enactment of the Sarbanes-Oxley act in 2002, managers have paid more attention to contract management, and the demand for ECM systems has increased substantially. Even though the topics of procurement and contract management have been addressed extensively in the literature, there has been little research on the use of ECM systems in such processes. Our paper presents key concepts and theories within contract management and analyses the potential of ECM systems to improve contract management based on these theories. The analysis is illustrated with examples from management of procurement contracts in a public organisation. Conditions for exploitation of the potential are discussed, and avenues for future research proposed.

Keywords: ECM systems, contract management, effectiveness.

1 INTRODUCTION

The purpose of this paper is to enhance the understanding of how Enterprise Contract Management (ECM) systems may improve contract management. This purpose is important. The governance of inter-firm exchanges has become increasingly important in the past decades (Haugland 2004). Particularly after the enactment of the Sarbanes-Oxley act (SOX) in 2002, managers have paid special attention to contract management. In line with this development, the demand for ECM systems has increased substantially. According to estimations by Gartner Inc., 200 million dollars were invested in ECM systems in 2006, and the amount was expected to increase by more than 10 % in the years to come (Gartner, 2007).

Inspection of the literature on contract management reveals that there has been little research on the potential of ICT to improve contract management. A few studies focus on *technical aspects* such as machine-interpretable representation of electronic contracts, electronic signatures etc. (Angelov and Grefen 2004; Schemm, Legner and Österle 2006). Other studies deal with *legal conditions* involved in electronic contract management (Gisler, Stanoevska-Slabev and Greunz 2000). Some articles discuss the potential of ICT to enhance the efficiency of contract management (time reduction, cost reduction) by *automation* of inter-organisational communication processes (Angelov and Grefen 2004) However, the potential of ICT to improve the specific contracting-related and organisational aspects of contract management are still sparsely covered (Schemm et al. 2006).

In this paper we analyse the *potential* of ECM systems to improve contract management. The analysis is at the conceptual level. It links the concepts of effective contract management and ECM system. Such an analysis is an early, but important step in a research process because it provides a framework for empirical studies to enhance the understanding of possibilities and challenges of ECM systems to improve contract management. The analysis is done from the buyer's perspective, i.e. we focus on procurement contracts. It is illustrated with examples from an ongoing study of contract management in a

power company, i.e. a publicly owned business firm that produces, sells and distributes hydroelectric power. Public procurement places special demands on contract management because of regulations by law to ensure competition. The company has recently installed an ECM system, Contiki.

The rest of the paper is organised as follows: First, we explain the concepts of contract and contract management, present relevant theories and define the concept of effective contract management. Next, we describe the functionality of ECM systems. In the following section, we analyse the potential of ECM systems to improve contract management based on the theories. Finally, challenges for exploiting the potential are discussed and directions for further research proposed.

2 CONTRACT MANAGEMENT

2.1 Contracts and the contract management process

A contract is an agreement between two or more parties specifying each party’s obligations and rights in relation to a transaction. A transaction can be defined as “giving up of something in return for receiving something else” (Macneil 1986). Transactions can be very simple, such as buying office supplies, where contractual terms are standard. They can be very complex, such as implementation of an ERP system, involving future deliveries that cannot be specified in great detail in advance.

Contracts can be categorised along several dimensions. One dimension is formal – informal. A formal contract is a signed agreement between the parties. An informal contract is not signed. It can be oral, but is still considered binding. It may, however, be difficult to establish what is actually agreed upon when a contract is informal. A contract can concern a single transaction, and it can apply to a series of transactions within a certain time period, i.e. a framework contract, for example with a specific supplier for deliveries of office supplies for the next year.

Contracts can also be categorised along the dimension simple – complex. A complex contract is characterised by a detailed specification of obligations and processes for dispute resolution. The purpose of the specifications is to minimise losses arising from transactional hazards. Most contracts are, however, incomplete because it is not possible to foresee all contingencies.

Contract management is the process of managing the organisation’s portfolio of contracts throughout their entire life-time from creation to termination. As a consequence of the increased interest in contract management, models of the process have recently appeared in the research literature. Figure 1 presents a model adapted from the models by Simila (2006) and Schemm et al (2006). Consistent with the purpose of this paper, our model presents the contract management process from a buyer’s perspective, and we emphasise the management of each individual contract as well as the monitoring of the portfolio of contracts.

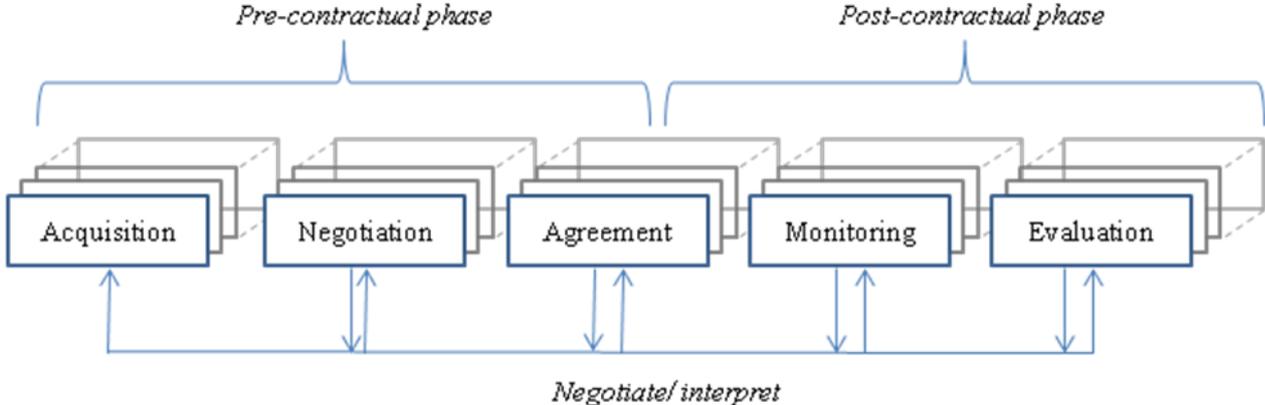


Figure 1. Model of the contract management process

In the following we will briefly describe the model phases:

The first main phase is the creation of the contract, the pre-contractual phase. The purpose of this phase is for the buyer to move from a state of need to find an acceptable solution. The phase has been divided into the following sub-phases: acquisition, negotiation and agreement. In the acquisition phase the buyers specify the need. Then they attempt to get an overview of relevant suppliers or collaboration partners and select those suppliers that seem most appropriate to satisfy the need (make a short list). In the negotiation phase the parties clarify the possibilities and conditions for a transaction and decide whether they should continue with the contracting process. The buyers rank the offers. The purpose of the agreement phase is to specify the conditions of the transaction, among others the contribution/compensation relationship, and make a final decision whether the contract should be established.

Public procurement has been regulated by law since 1899. The regulations aim to ensure that public purchases are based on actual competition (www.regjeringen.no). Thus predictability, transparency and traceability are important aspects of the public purchasing process. A public procurement can be carried out in three different ways: open competition, limited competition (using pre-qualification) and competition with negotiations (pre-qualification with negotiations regarding all aspects of the offer) depending on how expensive the procurement is and the characteristics of the solution needed. For instance, when needs are difficult to describe and the transactions are highly complex, competition with negotiation is more suitable.

The second phase is the contract administration, or post-contractual, phase. This phase is divided into the following sub-phases: monitoring and evaluation. In the monitoring phase the contract managers follow up whether the deliveries are in accordance with the contract. Contract administration also involves monitoring of proper documentation of all agreed upon changes. In the last phase the contract managers evaluate whether the need is satisfied and whether the supplier has performed according to expectations. When the conditions are met, the contract is terminated.

As illustrated in the model, management of a contract may not proceed as a sequential process through the phases, but may need several iterations of renegotiations and discussions regarding interpretation of the contractual terms.

In addition to creation and monitoring of each contract, contract management involves administration of the organisation's portfolio of contracts. Such administration includes composition of the portfolio of framework contracts that take care of the procurement of standard goods and services in the organisation. Closely related to this activity is to inform employees about the framework contracts and define procurement procedures so that the agreements are fully utilised and in accordance with the agreements. Another essential aspect of administration of the portfolio is to ensure that framework contracts are renegotiated or terminated in time.

2.2 Theories

In this section we will briefly present aspects of two theories that we consider relevant to our analysis of the potential of ECM systems to support contract management: transaction cost theory (Williamson 1985; Williamson 1991) and relation exchange theory (Macneil 1974; Macneil 1978; Macneil 1980).

In transaction cost theory the unit of analysis is the transaction, and each transaction involves some kind of contract. The theory rests upon two assumptions about human behaviour: bounded rationality and opportunism. The concept of bounded rationality originates from Simon (1957). It acknowledges the limits of human cognitive capacity and man's abilities to look into the future. Bounded rationality does not mean that decision-makers are irrational. On the contrary, they strive to make rational decisions. They are "intendedly rational, but only limitedly so" (Simon 1957) Opportunism is defined by Williamson (Williamson 1985) as "interest seeking with guile". However, Williamson does not assume that all actors behave opportunistically at all times. He only assumes that some people may behave opportunistically, and that it is difficult to know *ex ante* who is honest and who is not (Williamson 1985).

Williamson (1985) also identified three key dimensions for describing transactions: the frequency with which they occur, the degree and type of uncertainty to which they are subject, and the condition of asset specificity. Asset specificity refers to the degree to which an asset can be redeployed without sacrifice of production value. Asset specificity gives rise not only to complex delivery/compensation considerations in the pre-contractual phases, but also to a dependency relationship after the contract has been created.

Asset specificity is often illustrated with examples of investments in goods, such as the building of a bridge or a power line. Asset specificity is however also related to the supply of services, such as a consultancy firm's delivery of an organisation specific enterprise system.

A distinction is made between two types of uncertainty: external or environmental uncertainty and internal uncertainty or task ambiguity (Williamson 1985). External uncertainty refers to unpredictable events in the environment, such as political changes, strike and changes in consumers' preferences. Internal uncertainty arises from lack of effective communication between the parties, for example misunderstandings related to the buyers' needs and the suppliers' products and services. A special kind of internal uncertainty arises in situations when the buyers are not able to define their needs. This is, for example, often the case in ICT projects.

Bounded rationality and uncertainty imply that most contracts are not specified completely. As mentioned above, it is not possible for human decision-makers to foresee all possible future contingencies, particularly when transactions are complex and environments are highly uncertain.

Relational exchange theory can be traced back to Macaulay (1963) who observed that managers often did not attempt to specify exchange relationships completely, and that they seldom used legal sanctions to settle disputes. When transactions are complex with a high degree of uncertainty, formal contracting alone may seem inadequate. Inter-firm transactions are often repeated transactions embedded in social relationships (Macneil 1978; Heide and John 1992; Poppo and Zenger 2002). In such relationships trust may replace detailed contracting, and the enforcement of obligations occurs through shared beliefs – or norms.

Several norms have been proposed to “govern” contractual relations. In this paper we build on three related norms that we believe are of special relevance to our analysis: Solidarity, flexibility and information exchange (Heide and John 1992). Solidarity is the norm that results are attained through cooperation, and that the parties should stand by each other. Flexibility refers to the norm that the agreement should be adapted in case of unforeseeable events. Information exchange refers to the norm that the parties should share information in order to meet business needs.

2.3 Effective contract management

Based on the above concepts and theories we will now elaborate on what we mean by improving contract management. In our opinion, the purpose of implementing ECM systems should be to increase organisational effectiveness. Effectiveness is an external standard of how well an organisation is coping with the often conflicting and competing demands of the stakeholders on which the organisation is dependent, such as owners, customers, suppliers, authorities (for a detailed discussion, see, Pfeffer and Salančik (1978).

Effectiveness of contract management is related to the attainment of long-term business goals and includes not only attempts to minimise transaction costs and contractual losses, but also opportunities to create value. Effective contract management implies creation and administration of a profitable portfolio of contracts. It should allow for formal and relational contracts and combinations in order to minimise transaction costs and create good relationships with suppliers. It should take into consideration the need for safeguarding against hazards due to asset specificity, uncertainty and opportunism. It should satisfy the authorities' demands in public procurement. Furthermore, contract managers should extend the boundaries of rationality by continually striving to improve contract management, i.e. learning.

3 ECM SYSTEMS

An Enterprise Contract Management (ECM) system is a computerised system that has been explicitly designed to support contract management processes. The key characteristic of ECM systems is that contracts are represented in the system as objects with certain properties. A specific contract is defined and described by the data values that are entered into the system for each property. Other characteristics are that the systems represent contract process models such as our model shown in figure 1, and that they have special functions to support each phase. Furthermore, ECM systems have repositories for storage of the contract objects with their properties and data values. ECM systems are designed to support the management of the entire portfolio of contracts, including contracts that have been cancelled, suspended and/or terminated.

In the following we will present some of the key features of ECM systems. The presentation is based on Gartner's (2007) description of leading ECM systems, Saxena (2008) and our experience with Contiki.

Traceability: All data values describing contracts in the repository have a time stamp and a user reference attached to them. This feature implies that all contractual elements in the repository can be traced with regard to who made the changes, what was changed, and when were these changes made. Such information can be used for analyses and audits, for example if there is disagreement about who made specific changes, who approved the final version of a contract etc.

Contract repository and document management: In addition to the contract data, some systems also provide repositories for all contractual documents including emails, memos and other working documents. All such documents associated with a specific contract are linked to the contract object, allowing for a complete documentation of the dialogue between parties in each phase of the contract process.

Templates and wizards: The system provides two main types of templates: document and workflow templates. Document templates are used for formulating contracts, letters, memos, etc. For contract creation, for example, various templates are proposed according to contract type, such as single and multiple purchases, and type of acquisition, such as goods and services. Workflow templates are a sequence of general procedures that can be customised to fit the needs of a specific organisation. Examples are task scheduling, activity logging and routing functions to support contract approval procedures.

Wizard functions help the users choose the right document template and guide the users through the use of the template. Wizards also guide the use of workflow templates to design context specific procedures.

Buyer and supplier collaboration: Some ECM systems offer functionality for collaboration between buyers and suppliers. Contiki, for example, offers an online portal that facilitates communication between suppliers and the buyer in the acquisition, negotiation and agreement phases. Data describing the announcements of tender, tender procedures and specifications are made available to suppliers in the acquisition phase. In the negotiation phase, an access controlled solution presents data about the tender process, such as submissions, questions and answers. In the agreement phase, the outline of the contract as well as a complete log of all communication between the parties can be made available. The log is important in order to ensure traceability.

Internal collaboration: In order to enable information sharing within the organisation, ECM systems also offer functionality for internal collaboration. Contiki, for example, offers a web-based portal that segregates contract related data through role based views. The portal can be used to inform employees about procedures, procurement policies, news, recent purchases, contracts etc. The portal can also be used for collaboration among employees. Workflow views allow employees to participate in various parts of the contract management process. Tasks can be allocated and review, change and signing of documents can be allowed.

Reports: ECM systems provide search functions that allow users to search for data, documents and text within documents. A report generator allows users to combine, sort and group data according to their needs.

Integration with other business processes of ICT systems: Some ECM systems are fully SOA (Service Oriented Architecture) compliant. This means that the systems can be used intertwined with other web-service oriented systems. For instance, integrating Contiki with a procurement system can provide a complete overview of all activities and economic transactions related to the contracts.

Notifications and reminders: Users of ECM systems can define notifications and reminders. Notifications are messages about upcoming events and actions. Examples are notifications of milestones, expiry of contracts and the end of warranty periods. Reminders are messages that you have not done something, such as renew a contract or pay a bill. Notifications and reminders are often sent by e-mail.

4 ANALYSIS

In this section we will analyse the potential of ECM systems to increase the effectiveness of procurement contracts. The analysis will be structured according to the phases in our model of contract management presented in figure 1.

4.1 Contract Creation

Acquisition: The first step in an effective contracting process is that the buyers are able to specify their needs. In simple transactions and in complex transactions where the buyer is the expert, the specification of needs will be the *solution* to the problem, i.e. a specification of deliveries, needed goods and services. In transactions where the buyer is not expert, it is essential with a detailed specification of the *problem* that the contracts are expected to solve. For example, in transactions related to implementation of enterprise systems the suppliers (vendors and consultants) represent the expertise on the software technology. The buyers are dependent on the suppliers to find an effective solution.

An ECM system is probably not the proper tool to support elicitation and discussion of problems and solutions. However, the system provides document templates for various types of contracts. These templates can be adapted so that they represent context specific templates for each type of deliveries. Templates for specification of *solutions* should represent the experts' knowledge on the subjects. Document templates for standard deliveries can reduce time and costs. Templates for complex deliveries may in addition reduce errors and ensure complete specifications. Templates for specification of *problems* should enforce a description of the current state and the desired state. Furthermore, the template should enforce a listing of the possible reasons for the differences between the desired and the current state and assumptions of the factors that should be changed to attain the goals. Such a specification may facilitate the negotiations with the suppliers and contribute to a more effective solution. It may also provide the starting point of a discovery-based implementation process as proposed by McGrath and McMillan (1995), see below.

Another condition for effective contract acquisition is an overview of relevant suppliers. The ECM system as such cannot draw the buyers' attention to new suppliers, but it can support effective evaluation of previous and current suppliers. An ECM system facilitates collection and storage of data on suppliers, such as quality of deliveries, ability to deliver on time etc. Through the adaptation of workflow templates for monitoring contract fulfilment, contract managers can customise and formalise monitoring procedures in order to enforce systematic collection of relevant data. Document templates can be developed to facilitate the data collection. The document repositories make the data available over time. Using the search and report functionalities, relevant data can be easily retrieved and displayed. The ECM system may thus contribute to a more complete list of relevant suppliers and prevent selection of suppliers that have not performed as expected on previous occasions.

Negotiation: One of the problems in contract creation is that it is not possible to look into the future. Neither is it possible to specify all possible contingencies in a contract – and attempts to do so would be very costly. An ECM system can, of course, not improve humans' ability to look into the future. But by systematically collecting data about events when they occur, experiences and lessons learned, the system can enhance the decision-makers' understanding of history and thus help them improve future contract

specifications. The improvements may concern avoidance of errors, inclusion of paragraphs based on lessons learned and changes in negotiation procedures. To some extent, such improvements can be built into context specific contract templates and workflow templates that guide procedures. The ECM system can thus support the specification of contingencies and establishment of “best negotiation practices”.

In the actual negotiation processes, the online portal facilitates communication with the suppliers making published data available to all suppliers, thus reducing time and costs. Furthermore, customised document templates may facilitate *documentation* of negotiation results at each stage. The documentation should include details both of the deliveries and payments. In the power company it is a problem that the implementation of contracts is not properly specified. This results in ineffective management when for example terms of payments are absent and must be negotiated in the administration phase. It is also a problem that many contracts are informal. The contracts are negotiated by one or two persons, and there are typically disagreements on the scope and the conditions of the contracts, resulting in unnecessary use of resources and time to deal with such problems. The company has suffered considerable economic losses due to informal contracts. Providing templates for documentation of negotiation results and enforcing the use of the templates will increase the formalisation of contracting. Such formalisation contributes to more complete contract specification, less disagreement about contractual terms and will make the organisation less vulnerable to loss of key personnel.

On the other hand, ECM systems should not be implemented to enforce formalisation when detailed specification of conditions and contingencies is not appropriate. If experts on the subject find that relational *complements* are more appropriate, the system should allow for flexibility.

ECM systems can, of course, not replace expert knowledge and negotiation skills, but the systematic data collection on experiences with suppliers may enhance the negotiators’ possibilities to attain more favourable terms when contracts are renegotiated. For example, a contract manager using Contiki reported that he had negotiated a considerably lower price by extracting data documenting more favourable terms in an earlier bid. Another example is a supplier who agreed to more favourable terms because the contract manager could document several occasions when the quality of deliveries was below the agreed-upon standard.

Agreement: In the agreement phase workflow templates can be adapted to ensure that organisation specific procedures are followed as regards signing of the contract, and that all contract documents are stored so that they are available to all relevant persons.

Public procurement: An important aspect of effective contract management for a public company is to comply with the requirements of a public tender process. The requirements are related to the entire contract creation phase. Failing to satisfy the authorities, may lead to public investigation and result in economic penalties. It is a problem in the power company that some contract managers sometimes fail to fulfil the requirements. The problem is caused by lack of information about the specific requirements and lack of procedures to enforce the requirements. The ECM system can help the managers solve this problem. The system can enforce procedures that comply with the requirements. The specific requirements at different stages of the tender process can be embedded in workflow templates, and wizards can guide the users throughout the entire process. The online portal secures that the requirements as regards transparency and traceability are satisfied.

4.2 Administration of contract portfolio

Lack of control with and management of change and deviations is a well-known problem among contract managers, also in the power company that we study. Requests for changes of agreed upon conditions or requirements can give unexpected effects and have serious economic consequences if not evaluated and handled carefully. Contract management implies careful monitoring of each contract and administration of the portfolio of contracts.

Monitoring of deliveries: The ECM system may support the monitoring of each contract by providing document and workflow templates for monitoring the various types of contracts. In case of a formal contract for standard goods or services, data should be provided to follow whether deliveries are as ordered, i.e. quantity, quality and agreed upon price. Such data can be made accessible from the ECM

system through integration with the order handling system, Contiki, for example, is based on a Service Oriented Architecture (SOA) making it possible to integrate easily with other ICT systems.

In complex contracts under uncertainty, document templates for monitoring may include data on deviations from the planned solution, requests for changes both from buyers and suppliers, causes of the changes and documentation of agreed upon changes with estimated economic consequences. The ECM system can in addition enforce procedures for handling the monitoring processes such as ensuring that the above data are collected and stored in the ECM document repositories and allowing only certain employees to make changes in the contract. By carefully defining notifications of planned deliveries, the ECM system may help contract managers to detect deviations at an early stage and thus contribute to reduced losses. All documents in the database are traced with regard to who made the changes, what was changed, and when the change took place. Such collection of data allows for analysis and audit of the contract implementation, among others for evaluation of the collaboration with the supplier and for learning purposes. As described above, the data may also be useful in the contract negotiation phase.

ECM systems are based on the traditional view of changes as deviations from a plan, and they have specific functionality to register, monitor and manage changes, as described above. Contracts for complex projects where there is a high degree of uncertainty about the actual solution require other forms of monitoring. Such projects are often asset specific, and the buyer and suppliers must collaborate to find the solution, i.e. the contracts are clearly underspecified. In such projects, the ECM document and workflow templates should be adapted to support a discovery-based planning and implementation process, cf. McGrath and MacMillan (1995). This approach is an alternative to conventional planning and implementation where deviations and changes are usually considered to be negative events. In a discovery-driven implementation process, changes are incorporated as a natural part of the project. Within the ICT-industry such implementation has been an issue within the latest years. Project management methods called agile or evolutionary have been developed (Fernandez and Fernandez 2009). They are based on the assumptions that changes and deviations will always occur. In these methods, changes and deviations are incorporated into the prioritising activities, i.e. they are not treated separately as deviations from plan. We believe that ECM systems can be adapted to support also discovery-driven planning and implementation processes. The starting point is the buyers' specification of their problem and assumptions of factors that should be changed to attain the desired state, as mentioned above. The specification is modified with the suppliers' proposed solutions. The ECM system should support the buyers' and suppliers' collaboration towards the goal state by providing templates for documentation of planned activities, results, evaluations, changes, economic consequences and priorities. Workflow templates with notifications of milestones may ensure progress towards the goal state.

The point of the above discussion is, among others, to point out that ECM systems can be useful tools to document and monitor complex contract implementation processes even when the contracts with suppliers are clearly underspecified and based on close collaboration.

An essential aspect of effective contract management is the administration of the organisation's contract *portfolio*. Effective administration implies that managers and buyers are aware of the existence of contracts in the organisation, and that they know the details regarding the use of the contracts. Without proper information existing contracts are not used. The results are more expensive single purchases and not utilising the contracted price reductions due to purchasing large volumes from certain suppliers.

One reason that existing contracts is not utilised, is that the employees involved in purchasing goods and services do not have easy access to data about the contracts and contractual details. For example, in the power company many contracts are stored both in electronic and paper-based archives, but they are not made easily accessible. The result is that most employees do not have knowledge of the contracts they should apply for their purchases. The ECM system can eliminate this problem by distributing relevant contract data to employees according to their roles and establishing purchasing procedures that enforce use of the contracts, cf. the description of the internal collaboration portal above.

Another problem regarding management of a large portfolio of contracts is that lack of information regarding time limits for renewal or termination of contracts sometimes results in automatic renewal of expensive contracts that should have been renegotiated – or unplanned termination of contracts that are

Contract management	ECM system functionality	Potential to increase effectiveness of contract management	
		Process quality	Economic benefits
Contract Creation			
Acquisition			
Specification of needs	Document templates	Ensure complete specifications	Avoid/reduce errors
Simple transactions	specification of solution		Reduce time and costs
Complex transactions, buyer is expert			
Complex transactions, buyer is not expert	specification of problem and assumptions	Increase probability of effective solution	Inc. prob. future earnings/cost reductions
		Facilitate negotiations	Reduce time and costs
Overview of relevant suppliers	Document repository, data on suppliers	Critical evaluation of former suppliers	Reduce risk of losses
	Search function and report generator		
Negotiation	Document repository, data on performance	Enhance understanding of history	More favourable terms
	Search function and report generator		Reduce costs
Documentation of negotiation results	Document templates	Less disagreement on terms	Reduce costs
	enforce documentation of negotiation results		
Agreement	Workflow templates	Ensure quality of contract	Reduce time and costs
	signing and proper storage of contracts		
	Document repository		
Public procurement	External collaboration portal	Ensure that authorities' requirements	Avoid penalties
	announcement, complete log of process	are complied with	
	Workflow templates		
	information about public tender requirements		Reduce time and costs
Administration of contract portfolio			
Monitoring of contract implementation			
Standard goods and services, formal contracts	Document templates, data on deviations	Early detection of and reaction to	Avoid/reduce losses
	Integration with order handling system (SOA)	deviations	
	Search function and report generator		
Complex transactions, uncertainty	Document templates, data on deviations	Early detection of and reaction to	Avoid/reduce losses
	Workflow templates	deviations	
	enforcement of monitoring procedures		
Complex transactions, buyer not expert	Document templates, data on solution progress	Ensure satisfaction of needs	Inc. prob. future earnings/cost reductions
	Workflow templates	Cost control	
	support of discovery-driven implementation		
Monitoring of portfolio			
Framework contracts	Internal collaboration portal		Reduce costs
	information about contracts		
	Workflow templates		
	enforcement of use of framework contracts		
Renewal/termination of contracts	Workflow templates, notification functionality		Reduce costs
Evaluation	Document repository	Enhance learning	More favourable contract terms
	data on contract implementation	Improve contract management practices	Avoid/reduce losses
	Search function and report generator		Reduce costs

Table 1. Summary of Conceptual Analysis

critical to core activities in the organisation. This problem of can be handled by the ECM system through the functionality for defining notifications.

Evaluation: The collection of data in the monitoring process together with the system's search and report functionalities facilitates a critical evaluation of deliveries and the collaboration with the suppliers. Such evaluations may place the contract managers in a position to renegotiate more favourable terms by pointing to previous delays and shortages. The evaluations may also prevent selection of suppliers that have not performed as expected. The results are more favourable contracts and reduced risks of losses in future contracts.

Evaluation of contracts may also point to errors and omissions in the pre-contractual phases. Such evaluations may contribute to establishment of "best negotiation practices". The ECM system may thus enhance the contract managers' understanding of history and support learning.

5 DISCUSSION

Table 1 provides a summary of the above analysis. The listing of relevant ECM system functionalities is not complete. In order to save space we have not mentioned wizard functions and functionality for reminders. As regards the potential to increase the effectiveness of contract management, we have made a distinction between expected positive changes in contract management processes and economic benefits.

Inspection of table 1 shows that the effects of using ECM systems are mainly related to support of information processing and learning, which again lead to reductions in costs and losses. The support of information processing is closely related to exploiting the systems' capabilities to enforce data collection, documentation and evaluation procedures and to enforce the use of framework contracts. Examples of how an ECM system can enforce procedures are that it is not possible to create a contract without using the system, and it is not possible to pay an invoice until data on evaluation of the delivery have been entered into the system.

It is important to make a distinction between formalisation of monitoring processes and formalisation of contract creation. The system should not be implemented to impose requirements for highly detailed formal contracts in situations when the contract managers consider relational complements to be more appropriate. The system should allow for flexibility in contracting, as well. The electronic format of all documents facilitates information sharing between the buyer and the suppliers. Formalised monitoring processes also of flexible contracts ensure control with costs and progression and provide data for critical evaluation and learning.

For public companies ECM systems can guide contract managers in the public procurement processes and ensure that the requirements are complied with. Use of the procedures can also save time and costs in contract creation.

6 SUMMARY

Our analysis shows that ECM systems have a clear potential to improve contract management, both as regards the acquisition and monitoring of single contracts and administration of the organisation's contract portfolio.

However, our analysis also shows that there are several challenges to reap the benefits of ECM systems. The exploitation of the potential requires a considerable context specific adaptation of the functionalities provided by ECM systems. Such adaptation requires an understanding, not only of current problems of contract management in the organisation, but also a redesign of contract management processes. Implementation of the system is, however, not only a question of utilising the ECM system as an enabler

of redesigned contract management processes. The implementation is an organisational change process that also involves motivation and training of contract managers and employees. It is in itself an example of an asset-specific complex transaction under uncertainty, involving close collaboration with vendors and consultants.

In order to become acquainted with the phenomenon of contract management, we have examined contract management *problems* in a power company that has a comprehensive portfolio of contracts for simple transactions and complex, asset-specific transactions. Our analysis should be extended to empirical investigations to enhance the understanding of possibilities and limitations regarding the *adaptation* of the general functionalities of ECM systems to specific contract management requirements. Empirical studies should also be undertaken to enhance the understanding of challenges related to the *actual exploitation* of the potential in organisations.

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