

Rapport  
fra Skog og landskap

17/2013



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## CONTRACTOR FORESTRY

Proceedings of the 2013 OSCAR workshop held  
in Honne, Norway, 11 - 13 November 2013

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Edited by Helmer Belbo



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Nordic Forest Research  
Co-operation Committee (SNS)



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Cover Photo: Logging in Øyer, Norway, 2013. Photo: Eva Skagestad, Skogkurs

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## FOREWORD

Skilled, motivated and well-informed contractors today form the backbone of a professional, cost-effective, and environmentally friendly forest sector in the Nordic countries. This understanding forms the playground for policy makers, forestry certification bodies, forestry education, business standards and research in forest operations. The aim of this workshop is to provide a special forum for researchers, practitioners and other interested parties to get together in exchanging information, experiences and outlooks in the field of contractor forestry. The fundamental goal and our prime hope is that events like this will bring the Nordic-Baltic forest sector further in improving local and global competitiveness.

These proceedings are a collection of abstracts that represent a range of issues being faced, and the status of research within the field of contractor forestry in participating countries. Contractor forestry is a term that includes both operating skills and business management acumen of forestry contractors, but also the formulation of the special environment in which they operate, not least the conditions set and information passed on by landowners, forest management companies, other supply chain actors, and the markets themselves. As such, it represents the whole spectrum of 'service provision' in the forestry sector – both the process of placing the work tasks on the market, successfully winning the contract, and carrying out the work in both an economically and environmentally sustainable way that promotes the long-term existence of professional contracting outfits. Not only is the Nordic forestry sector fully dependent on contractor forestry, but the region plays an important role in determining international trends in forest operations and the world closely watches developments and emulates many of them, as the CTL method continues to expand into new markets. This places special impetus on the importance of the research work being done in this field.

We wish to thank the OSCAR coordinating committee for their constructive input, as well as all those who participated or contributed to making the seminar a success. We also would like to thank the Nordic Forest Research Cooperation Committee (SNS) for the financial support of the OSCAR2 network, and the Forestry Extension Institute at Honne who provided an exceptionally suitable environment and hosting for the workshop participants.

Helmer Belbo / Birger Vennesland / Bjørn Håvard Evjen  
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**Key word:**

Forest Operations Research, Nordic Baltic Region, Business Performance,  
Professionalization

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# 1. WHAT DISTINGUISHES SUCCESSFUL FOREST CONTRACTOR COMPANIES FROM OTHERS?

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The recent economic downturn in the Norwegian forest sector due to the closure of several large pulp plants has led to an increased focus on cost reduction and rethinking in the forest value chain. One important aspect to be considered is how contractors and logging companies can improve their overall business performance. This issue is not well covered in the research literature. The aim of this study is to gain a more in-depth understanding of how successful forest contractors manage their businesses. We aimed to identify and learn from the CEOs in the areas of value-added creation, financial solidity, cash liquidity, and degree of awareness of issues governing the forestry industry in general.

A qualitative approach was used to achieve a more in-depth understanding of social processes. A triangulation method was used in the data collection phase, including primary data from personal interviews with 15 CEO's in forest contracting firms, representing the Southern, Eastern, and Central parts of Norway. Furthermore, a literature review was conducted and secondary data was collected. To increase reliability, a semi-structured interview protocol was used. The interview protocol was conducted based on our research questions, previous data/findings and theory. The protocol was designed for an interview length of approximately one/two hour(s). All interviews were conducted in-person and were audio-recorded. Recording interviews allowed us to more accurately retain the interview data and be more engaged in the conversation, while it also provides extensive textual data. All audio recordings were verbatim transcribed and later analysed using established qualitative analysis technics.

All the questions formed in the interview guide were embedded in resource based theory. By this we focus on the internal resources within the firms such as financial capital, technology choices, human knowledge, organization inside the firm etc. All of the results have also been analyzed within the realm of resource based theory.

The results showed that linking choice of technology to local conditions like seasonal fluctuations, climate stability, steep terrain etc., seem to be important. Just as important is the chosen method of financing investments in new equipment. In Norway a large share of all logging machines are financed through leasing. In this we see some risks such as tax-based depreciation and price differentiation between new and used machines. How to deal with risk? What type of budgeting is used and how are budgets followed up on? What type of profitability calculation is carried out, if any? The answers to these questions seem to be crucial for the firms' profits.

Besides these direct economical and physical components we also focused on the human side of the firm. The type of dialogue, both between employees as well as between the entrepreneur company and the contractor company are of most interest. It seems that implementing routines of internal communication creates loyalty to the firm. It is also of importance to create trust between the entrepreneur and the contractor company.

In general it can be stated that firms that are willing to adapt to new market trends and new technology will be better off in the future. This is what has been shown in the past, but in this study we seek to identify the factors that can catalyze the dynamic of adaptation to the future within these firms.

**Keywords:** *Business Competence, Success Factors, Investments and Technology*

## 2. THE GOLDEN LOGGER OR HOW TO FIND, HIGHLIGHT AND ENCOURAGE A GOOD EXAMPLE

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### Background

If the Swedish forestry is to retain its competitive edge we need skilled contractors that will attract talented employees and can use machine capital optimally. The customers often offer harsh conditions for their contractors. Even so, there are a lot of contractors with good profitability and employees that thrive. The question is how they do in order to succeed? To find out more about what the success recipe looks like Elmia Forest fairs decided to find and reward the "The Golden Logger " with the help of Skogforsk. The quest for the Golden Logger was first launched in 2011 and following its success a rerun was launched in 2013. The aim was to find and reward a forest contractor who has developed and can describe the most innovative and effective way to improve profitability and success in attracting new staff and/or develop the existing staff. The distribution of The Golden Logger award took place during SkogsElmia (2011) and Elmia Wood (2013) and will continue.

### How we did it in 2013

Anyone could nominate their favorite contractor. The reasons for the nomination ranged from leadership to customer satisfaction, financial stability, embracing new technology and/or methodology, clever strategies regarding machine purchase etc. It should preferably be something that affects the contractor's profitability, productivity and/or attractiveness in the labor market in a positive way.

We received 21 nominations from different sources, e.g. customers, relatives and employees. Out of these we decided to continue with 15. The six that were disqualified did not meet one or more of the following criteria: profit margin greater than 5 %, solidity greater than 30 %, liquidity greater than 100 % (all of this during the last three years). We only accepted Swedish limited companies with at least two machines and three employees. We contacted these 15 contractors for a "light version interview" including the following questions: Why do you think you were nominated? What are you proud of regarding your firm? What is your philosophy regarding leadership? How is your firm's economy today and what will it be like in the years to come?

After the light interviews, that took 15-30 minutes in general, we met and discussed our findings. The three of us (all researchers at Skogforsk with at least ten years working experience) debated and argued and finally agreed upon five contractors that we wanted to nominate to the grand jury at Elmia. Each nominee was interviewed again, this time more in depth, and a nomination was written for each of them.

### Result

So far two Golden Loggers have been awarded and another eight finalists have been nominated. This award has been reported about specialist press (e.g. Skogsentreprenören no. 3, 2013, p.18) and is considered to be one way of re-launching the forest contracting industry as an interesting and exciting business. We have confirmed that the contractor corps knows about a lot of good practices which if shared by more could mean a revival of the forest contracting industry. The network of inspiring and driven contractors has greatly increased for Skogforsk and we have learned a lot from the contractors we have been interviewing. We have also constructed a gross list of ideas for more studies within this area. We strongly believe that the Golden Logger of 2011 (BS skogsentreprenad) and 2013 (J. Dahlqvist skog), their employees and everyone else associated with them have enjoyed the attention they have received. We also believe that these two contractors and the other eight finalists are an inspiration for other contractors and maybe even for the whole forestry industry as well?

**Keywords:** *Golden Logger, forest contractors and forestry machine owners.*

### 3. THE IMPACT OF INDUSTRIAL CONTEXT ON PROCUREMENT AND MANAGEMENT OF HARVESTING SERVICES – A COMPARISON BETWEEN TWO SWEDISH FOREST OWNERS ASSOCIATIONS.

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#### **Background**

For Swedish forest companies, harvesting represents the highest proportion of the total production cost (Brunberg 2012) and has been a focus area for productivity development for decades. Since the 1950s, mechanization has boosted the productivity development (Ager 2012), but during the last three decades a stage of technological maturity has been reached. In the last years, there have been indications of a declining productivity (Nordfjell et al. 2010). This comes at the same time as an increase in market demands for quality and precision (Högnäs 2000) as well as societal and environmental demands (Hultåker 2006). Simultaneously, a decline in harvesting contractor profitability has been noted (cf Hultåker 2006).

Outsourcing of harvesting services became a general strategy among all larger forest companies during the 1990s, and contractor forestry is presently dominating (Ager 2012). The motives for outsourcing seem to have been to decrease the amount of bounded capital in machinery and to give incitements to productivity enhancement by paying piece-work rates (Norin 2002). By outsourcing, a company can also increase its production flexibility (Quélin & Duhamel 2003). Except for cost reductions, the outcome for forest companies to some extent has been increased flexibility in the sense of more rapid adjustments of their harvesting capacity level to current needs (Ager 2012). By outsourcing, however, the gain in flexibility comes on the expense of control, in the sense of securing capacity and competence (Arnold 2000).

Given the increasing demands and existing problems mentioned above, improved management practices are required.

#### **The current study**

This study's purpose was to analyze the impact of Swedish industrial context on procurement, management, and development of harvesting services. Interviews were used to model functions at two forest owners associations (FOAs) with fully outsourced harvesting services. One FOA had its own sawmills, requiring frequent harvesting production adjustments to meet varying demand, which caused short-term demand uncertainty (<6 months). The long-term uncertainty was however low because of good visibility of the own sawmills' future demand (>6 months). The other FOA had no own mills and produced wood according to fixed six-month delivery contracts. This meant few production adjustments in the short-term, but long-term uncertainty due to low visibility of future demand. The demand uncertainty resulted in corresponding needs for harvesting capacity flexibility. This could have been met by a corresponding proportion of short-term contracted capacity. In this study, however, a large proportion of long-term contracts was found, motivated by a perceived shortage of contractors that were capable of fulfilling all service requirements. It was also noted that although contractor investment cycles (4-6 years) matched the FOAs' strategic horizons (3-5 years), contractors' investment plans were not considered in the FOAs' strategic planning. The study concludes with a characterization of different FOA contexts, their corresponding needs for capacity flexibility and the effects on service procurement.

In the study, it was noted that complexity in operational work tasks varied between wood supply districts as consequence of varying local contexts. Three factors were identified to increase complexity: i) the number of mill quotas, ii) the number of harvesting teams, and iii) the number of harvesting sites. An effect of high complexity was reduced time for follow-up and development activities, because of more time-consuming supervision and administration activities. Another effect of an increasing number of mill quotas was an increased need for short-term replanning of harvesting operations. This problem existed because of common differences between estimated and actual outcome of volumes and assortments from harvesting sites. A greater number of mill quotas increased the sensitivity to these differences in outcome, thus increasing the number of adjustments needed in harvesting schedules and bucking

instructions. An effect of increased adjustment needs was a shortened time horizon to give final harvesting instructions to contractors. Short time horizons were perceived as negative by contractors who were dependent on timely instructions to enable their preparatory planning.

**Keywords:** *contractor forestry, service procurement, harvesting operations, logging, operations management.*

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## 4. STRUCTURE CHANGE HAS NOT IMPROVED THE PROFITABILITY OF HARVESTING COMPANIES

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The economic turmoil at the end of 2000 decade brought structural changes in wood harvesting business in Finland. 2007 was high season with 64 million solid cubic meter commercial cutting following just after two years only 48 million cubic meter cuttings in 2009. Many harvesting companies were out of work and without help of strong economic reserves they had to wind down their business. Among small enterprises a real insolvency is rare in this branch. Bank takes the machines, which are deposit for the loan, but rest of the debts stay to pay by the entrepreneur.

During the recession large service buyers, i.e. integrated forest industry, reorganised their own wood procurement organisations. Instead of negotiation between industry company and harvesting companies, new harvesting agreements base now on bidding competition. The size of negotiation object was increased so that one "old" harvesting company could not fulfil it. Harvesting companies could increase their size for example by organic growth (buying other enterprises) or by hiring subcontractors. One quite popular way was that few enterprises established a limited company, which makes the bidding with forest industry. The owners of this limited company stay independent, but there is a need to have strict rules how the owners of limited company act under different economic issues.

Harvesting of forest energy has brought new customers to the side of integrated forest industry, independent saw mills, state forest and forest management associations. Power plants started buy harvesting services, but nevertheless even the energy wood harvesting is still mostly in hands of integrated forest industry, because most of the energy wood is part of round wood business. The profitability of pure energy wood business is still open.

There are still other questions making the profitability seek of harvesting companies stringent. The seasonal and economic variation of operation volumes requires too large machine and personnel reserves and on the other side there are too long periods without operations. The productivity of harvesting work per machine and operator increased strongly 1980 to 2000, but after that poorer working conditions have levelled or even decreased the better productivity of developed machinery. The general profitability of harvesting companies has continuously decreased.

## 5. THE BUSINESS BETWEEN CONTRACTORS AND CLIENTS

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### Background

The development of contractor firms in Swedish forestry is tightly connected to the development of productivity in forest work since the 1960s. In the early history of Swedish forestry there was a contractor system where the contractors were horse owners who supplied timber for sawmills owners. When forest machines were introduced in forestry these contractor firms disappeared. Instead, the forest enterprises created an internal function responsible for the operative forest work. To increase technical efficiency and productivity, the terms of ownership of the machine changed. The machine operator remained employed within the forest enterprises but now owning their machine. This was a contributing factor to increased productivity in forestry work in the '80s. The machine operators got a greater responsibility and the technology was developed. In the '90s, the machine operator became independent contractor firms. Together with technical and organizational improvements (e.g. machine performance, scheduling of operations, etc.) this has resulted in a major increase in productivity in forest work until 2005.

### Discussion

In recent years the productivity curve has stagnated. At the same time the industry requests increased profitability and productivity but also long-term sustainability. Approximately 90 % of all forest work in Sweden is performed by contractors and contractor services today account for an annual turnover of some SEK 10-15 billion.

There are most likely several technical improvements which can contribute to an increase in the productivity curve. In addition, we believe that developing business between contractors and clients has potential to play a significant role in increasing forest work productivity. The business between contractor and client can typically be described as follows:

- To a large extent, the clients dictate the market conditions and business models.
- The way in which the client uses its business model determines the contractor's experience of the business and by that the contractor's direction of development.
- The contractor's business forms the basis of the business between contractors and clients.
- A contractor with a weak financial position becomes a weak link in the supply chain.

In the business model the parties can have difficulty in understanding each other's behavior and situation, therefore the business agreement plays an important role. The business agreement between the contractor and the client includes a number of parameters. In the agreement parameters differs to a large extent. In general, the contractors need several parameters to decrease the risks while the client only needs a few. The business is often experienced as more difficult if the agreements contain several parameters. Therefore, it is important to achieve balance in the number of parameters in order to succeed in the business model. There is a need to increase knowledge and awareness to the situation of the other party. The annual contracted volume is often a small business for the clients but a matter of survival for the contractor. The relationship between the client and the contractor is a key factor in the procurement process. In recent years, there has been a climate of increasing cooperation in forestry, particularly in respect to development work. Many businesses today are developing collaboration or partnership models.

Alternatively, if new business practices are implemented without the due care required, the forest enterprises will most likely frighten away the contractors that tomorrow's forestry depend on. I.e., those who are genuinely interested in moving the business forward and improving efficiency and productivity. By applying a supply chain perspective and creating business models that cover the needs of both parties, sufficient profit can be generated throughout the supply chain.

### Conclusions

The stagnating trend in forest work productivity is problematic as there are large economic values at stake. We believe there are several areas where there is a potential in developing the business between contractors and clients. i) Increased communication, respect and understanding between the parties ii) A more strategic approach to contractors challenges of tomorrow. iii) Designing agreements that satisfy both parties and create opportunities for collaboration. iv) Improve the understanding on how the client's

business practice affect contractor's development and orientation v) Identifying the most important conditions that the contractors and the clients can offer the other party.

***Keywords:*** *Productivity in forest work, contractor, client, business models and collaboration.*

## 6. PRE-PLANNING OF FOREST OPERATIONS – AN AREA FOR IMPROVEMENT: COURSES FOR FORESTRY STUDENTS AND FOREMEN IN CHARGE

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### **Objective**

In Sweden and Norway a lot of effort been made to improve efficiency and decrease costs connected to forest operation. Usually the focus has been on working methods, driving technique and new equipment, as well as improved systems for data processing and different system for fast and accurate communication.

However a lot of entrepreneurs and machine operator claim a lack of information and pre-planning of the sites offered for clear cut and thinning operations. This fact often causes extra time consumption and increases the risk for mistakes.

Based on a survey by Skogforsk 2011, asking entrepreneurs in the Swedish forestry sector, some emerging topics were identified to improve this situation. Similar trend was also seen in a study in Norway done by Skogkurs in 2010/2011.

To alleviate these problems some material for a course were collected from people on different positions in the supply chain, all known for high competence and aware of "best practice". This basic material is made as a mix of real life examples and mathematical calculations able to highlight the importance of a serious pre – planning.

### **Aim**

The aim of the courses is to avoid costs caused by lack of pre-planning or lack of understanding for the machines ability and demands. The course material was designed in chapters possible to adapt for different companies or conditions.

### **Material & method**

The courses are conducted as seminars adapted to the client company's local conditions. By discussing the planning and preparation for a logging site by terms of RECO (Rational and Efficient Cost Optimization), the competence and awareness for people involved will rise and thereby lower the risk for deficient planning.

In Norway, an elected employee from each organization will be trained to be instructor for the other employees in his/her own organization.

### **Result & discussion**

The material for the courses in Sweden and Norway has many similarities, but also differences that reflect different practices in the two countries.

The course concepts has been tested and evaluated in both countries. In Sweeden by forestry students at Skinnskatteberg. It has also been evaluated by two separate advisory groups in both Sweden and Norway and thereafter slightly adjusted. Through the short initial courses and continuing information and training afterwards, participating companies should be able to avoid some of the most common, and costly, mistakes. In most cases (based on the Skogforsk survey 2011) each company are using existing checklists poorly. By higher understanding of the importance of all the factors, technical, environmental and economic it is likely that people in charge will achieve a better result in the pre-planning operations.

With the current low profit margins of forest operations, the question is not if training is needed, but rather if anyone can afford not to do things correctly.

**Keywords:** *Training, Planning, Forest operations, Supply chain management*

## 7. LEARNINGS FROM CERTIFICATION OF CONTRACTORS IN SWEDISH FORESTRY

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**Given that half of the Swedish forest land is owned by small family forest owners, and that the demand for certified wood has been increasing since the late nineties, we can conclude the following:**

- Contractors are an essential link in the Swedish certified wood trade chain, from the forest owner to the market for wood products
- Certification of contractors enables forestry certification of small family forest owners
- Certification of contractors create conditions for equal competition – but also heavier administration
- Contractor certification was implemented in Sweden 15 years ago – the standard has been revised twice – compliance has improved steadily
- Cross-border contractor certification requires a framework that takes into account the national adaptations of forest certification in both FSC and PEFC

**Contractors are an essential link in the Swedish certified wood trade chain, from the forest owner to the market for wood products.**

Mainly large publicly or company owned forest become certified, while relatively few small and medium sized private forest owners choose this possibility. Half of the Swedish forest land is owned by private individuals. This is referred to as 'family forestry' and consists of about 350 000 forest holdings that account for 60 percent of harvested volumes in Sweden. Since the size of family owned forest holdings is generally small, forestry activities do not need to be undertaken very often. As a consequence, in most cases there are not prerequisites for annually recurrent incomes and/or continuous obtaining of information and knowledge. Taken together, this makes it difficult for small scale forest owners to become directly certified. In order not to disqualify this large group of forest owners from the possibility to certify their forestry, group certification through umbrella organizations has been elaborated within the framework of the Swedish system for PEFC-certification.

It is against this background that the Swedish PEFC demands certification of forestry contractors within the framework of the Swedish PEFC system (Svenska PEFC, 2011).

**Certification of contractors enables forestry certification of small family forest owners.**

A central principle of the PEFC is that the forest owner is responsible for ensuring that the requirements of the forest standard are met. However, the extent of forestry operations undertaken by forest owners themselves is quite low in Swedish family forestry. This is especially true for forestry operations in the later stages of a stand's rotation period. At the same time, the major part of the PEFC requirements concern forestry operations in these late and final stages. The major part of such measures is undertaken by hired contractors. This means that these play a key role in meeting the requirements of the forest standard. The standard requires that the contractors engaged, themselves are certified, which implies that the undertaking of individual forestry operations, including the responsibility for fulfilling the certification requirements, may easily be delegated.

**Certification of contractors creates conditions for equal competition – but also heavier administration.**

Previously, contractors had a wide variety of different texts of agreements and conditions to consider. A standard and a certification created the basis for simplification, while all face the same requirements.

Certification does not solve all problems for today's contractors, but it is an important component for all in the forestry sector where we now see a clearer division of responsibilities between the forest owner /forest company and the contractor. A common standard, equal for all, also creates a greater sense of security for the individual contractors who can base their business on the competition on equal terms.

Although certification has led to simplifications in some aspects, increased documentation requirements has also led to a heavier administrative burden on contractors. Results of recent internal audits show that non-conformities concerning documentation requirements are most frequent, while non-conformities in performance are far fewer.

### **Contractor certification was implemented in Sweden 15 years ago – the standard has been revised twice – compliance has improved steadily.**

The majority of forestry contractor companies are small companies with limited possibilities to cope with the increased administration and costs associated with direct certification. The possibility to become certified through group certification has been elaborated also for this category. Group certification means that forest owners and forestry contractors become certified under a common certificate which is upheld by an umbrella organization. This in turn means that costs for all parts of certification can be shared among affiliated parties.

Forest contractor certification has been well established in Sweden under the PEFC scheme since the late nineties. In 2013, there are eight different Group Managers offering group certification for forest contractors within the PEFC framework with a total number of 2,500 certified contractors – representing around 60 % of all the professional forestry contractors in the country. These Group Managers play an essential role for management, establishment of routines, monitoring and follow-up.

The major critical factor concerning the fulfillment of the standard is not the performance of the contractors, but the communication between the forest owner and the contractor(s).

### **Cross-border contractor certification requires a framework that takes into account the national adaptations of forest certification in both FSC and PEFC.**

Certified contractors are trained to perform logging operations in regard to the Swedish PEFC standard, but the training also covers most of the other requirements of FSC. Field tests, carried out in the CeFCo project showed that PEFC contractor certification represent a functional, cost effective and robust tool that also covers almost all of the FSC indicators that have been considered relevant (Söderberg et al., 2012).

However, both certification systems have national adaptations and a cross-border contractor standard must therefore be based on a common open structure with a focus on management system in which the respective national standard requirements can be inserted.

**Keywords:** *Certification of forestry contractors, compliance improving*

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## 8. RECO – OPERATOR TRAINING FOR EFFICIENT LOGGING, REDUCED FUEL CONSUMPTION AND IMPROVED WORKING ENVIRONMENT

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Four years ago, the Swedish forestry sector identified fuel efficiency and productivity as key areas for development leading to improved profitability and competitiveness for logging. In 2009, on the initiative of TSG (Technical Cooperation Group, run by Skogforsk) a group of machine instructors and technicians tied to the six largest forest machine manufacturers gathered. They decided to launch the RECO, a training programme in the following four steps:

1. The machine owner/customer starts follow-up of performance and fuel consumption before the actual training starts.
2. A one-day theoretical summary.
3. Practical training, including logging team counselling as well as individual advice (1/2 day per operator). After completion of point 3, a written report is sent to the customer.
4. Follow-up – 1/4 day per operator, within six months of the actual training.

The RECO-group have consecutive meetings once every eight months to discuss new experiences, recent technical development and to follow up and continuously improve the RECO training programme. In the autumn of 2011, the RECO-concept was introduced in Norway, where it is managed by SKI (The Norwegian Forestry Extension Institute).



*Figure 1. A RECO meeting aimed at improving practices of the training programme.*

Currently RECO-Sweden is a network of 26 persons, ten of which are method instructors, which are primarily running the training programme and an additional 16 are technicians affiliated with the machine

manufacturers. A positive effect of the network is that “the RECO way” has been spread and applied also when the manufacturers carry out product training in e. g. conjunction with machine delivery or upgrading of machines. A second effect is that the technicians receive influences that are used by the manufacturers in order to improve the machines in different ways, including novel ways of generating automated feed-back from machine to operator.

The aim of the RECO training programme is to increase the operator’s awareness of what factors that influence fuel consumption, machine wear, productivity and working environment.

The largest reduction of fuel consumption has been achieved through decreased idling and by adhering to a more rational work pattern. Often, fuel consumption per hour is increased as a result of the training, but the fuel consumption per cubic meter, which is the relevant measure, is reduced.

Many customers testify that the average performance has increased following the training. This is especially evident and most significant with crews that have not previously undergone any dedicated method instruction.

A very positive effect is that many operators claim that also their working environment has been improved as an effect of the training. A possible explanation is that their post-training work is more structured and rational, often with lower crane speed but with higher precision. The ability to work after a structured and logical pattern, minimizing mistakes that create unnecessary work seems to decrease both physical and mental strain.

Since the start in 2010 until today – fall of 2013, around 1300 Swedish operators have been trained. Presently, training is planned for another 200 operators, with SMF (The Swedish Forestry Contractors’ Association) as one of the important customer. Feedback from operators and machine owners alike show that both groups feel that the training has given valuable new insights and skills and some companies are now signing up for a second round of training.



Figure 2. The introduction scene from the RECO instructional film Smart Harvesting and Forwarding.

In 2013, a “tailor made” instructional film called *Smart Harvesting and Forwarding* was ready for use in the RECO training programme. Also, a new pedagogic layout aimed at improved activation of the course participants during the theoretical summary has been put into practice. The aim is to enable participating companies, to identify and register potential improvements themselves and to formulate and act upon a plan for progress, adapted to the individual company’s needs.

**Keywords:** RECO, presentation, experiences, evaluation, forest machine training

## 9. DEVELOPMENT NEEDS FOR CONTRACTOR FORESTRY IN THE NORDIC-BALTIC REGION

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### **The most urgent needs for developing Nordic-Baltic logging contractors' firms**

A survey was made to identify the most urgent perceived needs for further development in order to strengthen logging contractors' firms in the Nordic-Baltic region. Improved leadership and managerial skills were identified as the single most important factor, with better business finance skills and improved practical workmanship of employees on second and third place.

There were, however, significant differences between the countries as well as between types of respondents (contractor or buyer/researcher). Norwegian and Latvian contractors agreed that a more predictable business environment would simplify their business, and Latvian contractors also stressed the importance of being able to mobilize capital for basic investments. Swedish and Norwegian contractors wished for better and clearer communication from their customers while the other countries ranked this relatively lower.

The answers to the survey are considered to give a fair representation of current views in Latvia, Finland, Sweden and Norway while the material is too limited for Denmark. Hopefully the results may be used to improve extension services and development efforts in contractor forestry.

### **Survey construction and analyses**

The simple survey was sent out by e-mail and translated to national languages through the OSCAR network. It contained 12 alternative suggestions of topics to address in order to improve "logging contractors' overall situation and profitability" plus a free-text alternative where respondents could verbalise their own suggestion. The respondents were asked to pick out and rank the five most important areas for development. Respondents were sorted by country as well as by the two categories Contractor and Buyer/Researcher, respectively. Both the frequency of a given alternative and its weight, available through the ranking are included in the analyses. The available choices included:

*Improved maintenance and repair skills and Updating machines and equipment to current state-of-the-art.* These two alternatives were analysed separately as well as aggregated as "Technology", signifying the importance of having cutting edge technology and the skills to service and repair it. The practice of joining associated alternatives under a joint heading was not known to the respondents.

*Improved economy and business finance skills and Improved negotiation and calculation skills.* These two alternatives were analysed separately as well as aggregated as "Economy", signifying being able to analyse economic matters and acting on economic data.

*Improved method and machine operating skills and Enrolling better machine operators/employees.* These two alternatives were analysed separately as well as aggregated as "Methods", signifying workmanship and aptitude.

*Improved business behaviour and communication with customers (i. e. with buyers of services) and Improved leadership and managerial skills (i. e. internal communication & developing staff).* These two alternatives were analysed separately as well as aggregated as "Internal communication", signifying the expedience with which the contractor communicates with staff and with buyers.

*Improved clarity and timeliness of work orders from customer (buyers) and Clearer communication and improved business behaviour from customers (buyers).* These two alternatives were analysed separately as well as aggregated into "External communication", signifying the expedience with which buyers communicate work orders and conditions.

Two of the alternatives, *Improved silviculture and nature conservation skills and Improved attractiveness for the logging and forestry sector in general* were analysed separately, as was the free-text option.

## Results

The survey showed significant differences between countries but also pointed at differences in perceived importance of different factors depending on the type of respondent. For all countries and types of respondents, developing internal communication skills and employing skilled operators are highly ranked. The total results per aggregated alternative are presented in Figure 1.

Looking into significant differences between countries, Swedish contractors ranked improved attractiveness of the logging and forestry sector very high, indicating problems in hiring motivated operators. Swedish and Norwegian respondents agreed that improved communication with the buyers is important while Finnish and Latvian respondents saw this as a significantly smaller problem.

In general, contractors did not point at acquiring cutting edge technology as a perceived way to improvement, while researchers and buyers ranked technology higher. A logical explanation for this may be that since contractors primarily compete regionally, having “modern enough” equipment is sufficient, whereas buyers competing on the international market face relentless price competition. However, in Latvia, respondents agreed that both improved silvicultural competence (moderate weight) and better technology are needed.

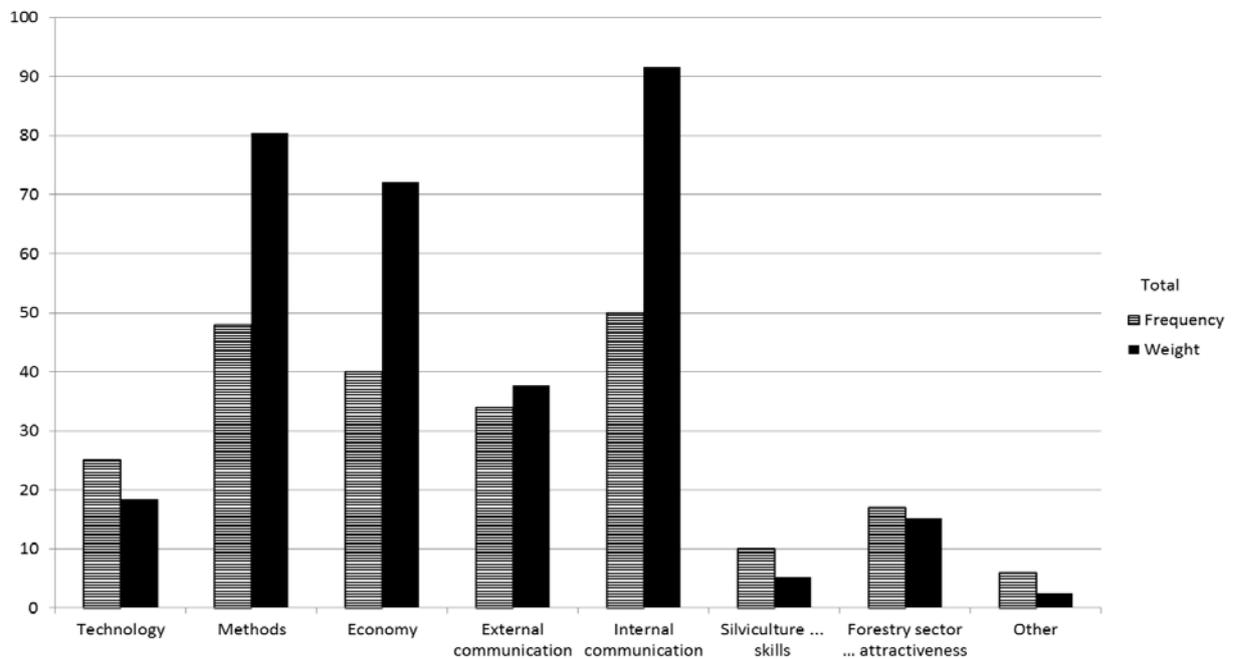


Figure 1. Total results for all received answers. Frequency denotes the number of respondents for each aggregate alternative while the Weight variable denotes the rank given to the alternative by the respondents. A high frequency and a low weight thus means that many respondents have checked the alternative but at a low rank.

**Keywords:** Contractor forestry, Nordic-Baltic, organisation development, extension services.

## 10. JSC LATVIA'S STATE FORESTS LOGGING SERVICE PROCUREMENT PRINCIPLES AND CHALLENGES

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JSC "Latvia's State Forests (LVM) is a State-owned joint-stock company that manages the State forests in Latvia. The area managed by LVM is 1.62 million ha, of which 1.4 million ha is forest land. Each year LVM produces and delivers to the customers about 4.4 million m<sup>3</sup> of wood assortment. For the production and delivery of this wood assortment volume, LVM buys logging and timber transportation services from the private entrepreneurs. Overall, the services for LVM providing over 70 logging and 40 timber transportation companies. Given that LVM is a State-owned company, all the services required for the economic activity are purchased in open tenders under the Public Procurement Law.

LVM service procurement procedures are created according to the company's objectives and taking into account the norms set by the Public Procurement Law. Such type of the service procurement is different from the procurement practices used in the private entrepreneurship. This creates challenges for both the service buyer and provider. A quality assessment and motivation system has been incorporated in LVM logging service contract, which contributes to the improvement of the quality and efficiency of the service, but it cannot completely ensure that in tender the contract obtains the most qualitative service provider. This is a challenge that needs to find a solution in the future – how can in open tenders, where everything is decided by the lowest price, the buyer can purchase qualitative service? This is challenging to the suppliers of qualitative service as well. They must compete only on price since the quality of the offered services is not evaluated. What are the solutions for the logging service quality evaluation in open tenders organized under the Public Procurement Law?

***Key words:*** *logging service, service procurement, service price, quality, efficiency.*

# 11. FOREST CONTRACTORS ENTREPRENEURIAL SKILLS DEVELOPMENT IN FINLAND BY FOREST EXPERTISE AND INNOVATION NETWORK-PROJECT IN 2009–2013

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Forest contractors are one of the main target groups in Forest expertise and innovation (FEI) network-project. Focus has been in organizing educational workshops for forest contractors on different topics which are important in order to develop entrepreneurial skills. Main focus has been in handling economical issues, which are typical in forest contracting. Topics have been chosen so that they cover main areas of business planning and management. Most workshops last one day and some are 2 days long.

Developing personnel management has also been one focus area in FEI project. We have offered workshop and personal training in developing leadership & interpersonal skills and well-being at work.

## **EDUCATIONAL WORKSHOPS FOR CONTRACTORS**

Educational workshops have been organized in such topics as:

TOPIC	PARTICIPANTS
<b>1. Learning to use financial statement of company</b>	41
<b>2. Preparing for contract negotiations</b>	39
<b>3. Investment and cost planning</b>	36
<b>4. ICT training for entrepreneurs</b>	18
<b>5. Business planning and service development (2 days)</b>	17
<b>6. Special issues of haulage sector</b>	15
<b>7. Taxation planning (2012 – 13)</b>	13
<b>8. Profitability and growth of forest contractor SMEs</b>	10
<b>9. Nature management training for entrepreneurs (2 days)</b>	10
<b>10. Co-operation and networking with other contractors</b>	5
<b>11. Quality management planning</b>	3

Workshops have been planned and prepared to 11 different locations around Finland. Workshops have been arranged if 5 or more participants have registered. In all 115 forest contractors have taken part to educational workshops and 207 education days have been done (table 1). Average 1.8 days / contractor, varying from 1 to 5 days / contractor.

## **DEVELOPING WELL-BEING AT WORK**

Developing well-being at work has also been one topic. This has included personal measurements such as 72 hour heartbeat monitoring to indicate stress levels and recovery from work. Personal measurements and analysis of the results have been made by healthcare experts. Personal consultation based on the results has been given to participants how to improve their well-being at work. Follow up measurements, analysis and consultation have been done 6 months after first time.

Table 1. Workshops planned and held during the project period.

YEAR	PLANNED AND PREPARED WORKSHOPS	ARRANGED WORKSHOPS	PARTICIPANTS / YEAR
2009	2	2	15
2010	12	9	47
2011	35	14	99
2012	23	5	28
2013	18	4	18
<b>SUM</b>	<b>90</b>	<b>34</b>	<b>207</b>

All together 17 forest contractors and other forest entrepreneurs have taken part to these activities.

### **DEVELOPING LEADERSHIP AND INTERPERSONAL SKILLS**

Developing forest contractors skills of leadership, interaction and work culture development has also been one topic. For this purpose we have used Deep Lead interaction coaching program (Kazmi & Kinnunen 2012), which has 4 workshops within a 1 year period. 9 forest contractors have taken part to Deep leadership training.

### **ICT TOOLS FOR FOREST CONTRACTORS**

Project has also developed tools for planning investment profitability and contract pricing. These are at testing phase at the moment.

**Keywords:** *Contractor, education, entrepreneur, leadership, well-being*

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## 12. AGREED DOCUMENTS – LOWERING TRANSACTION COSTS IN FORESTRY CONTRACTING

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### **Abstract**

As Swedish forestry enterprises rapidly outsourced the forest operations, a new contracting industry is developing. The aims of this paper were to examine contract standardization schemes, believed to be a useful tool in this industry context, and to picture the process of developing such contracting tools.

This paper refers to the Swedish situation, where the legal role of the formal contract differs from that in common law countries. This paper refers only to the business to business market.

A market place of contracting is likely to develop standardized contracting schemes. A contract scheme incorporating both agreed documents and standard templates is suggested to facilitate the market place, lowering transaction costs and increasing transaction value. In forestry, one of the main advantages of an industry standard is the fostering of general contracting skills and business trust in-between the parties. Discussing the benefits and drawbacks of contract standardization, the article proposes a generic standardized contract structure for industrial contracting.

Even though agreed documents are an old feature in professional contracting, the literature is limited, and merely focused on examining legal aspects of wordings or paragraphs. This paper relates general literature on transaction costs and contracts to the development of a standardized contract scheme for forestry contracting. It contributes to the limited literature on technical execution of an outsourcing strategy, rather than to the extensive literature on strategic reasoning on the same. Discussing contracting standardization, this paper also contributes to the equally limited literature on standardization of services – a discipline believed to expand.

**Keywords** *AB, ABFF, ABSE 09, ABT, contract standardization, contracting scheme, general agreement, outsourcing, sub-contracting, Sweden*

## **THE CASE - AN EVOLVING FORESTRY CONTRACTING MARKET**

### **Introduction**

The overall mission of an industry is to stay competitive. This can be achieved over time by adding sellable value or – primarily on mature commodity markets– by cutting costs (Porter 1985, Johnson and Scholes 1999). The latter is the prevailing focus in the Nordic forest sector, heavy on pulp and paper export and price takers on a global market. Lately, production costs within forestry are rising, intensifying the search of cost savings (Brunberg 2012). Traditionally, such discussions have targeted direct production costs such as lowering fuel consumption and cutting down-time in machinery. In recent years, costs of business logistics are included in cost-cutting discussions (Niskanen 2006, Lappalainen 2009, Soirinsu and Mäkinen 2009, Furness-Lindén 2006, 2008, 2010, Norin and Furness-Lindén 2008, Penttinen et al. 2011) and the industry is seemingly acknowledging the challenges of a “new” forestry feature – contracting.

### **The history – freshmen in contracting**

Some 20 years ago, the vast part of operational forestry was in the hands of forest enterprises or Forest Owner Associations. The employees of these large entities logged, planted, siteprepared and cleaned with equipment owned by their employer. A structural change has occurred since then (Figure 1).

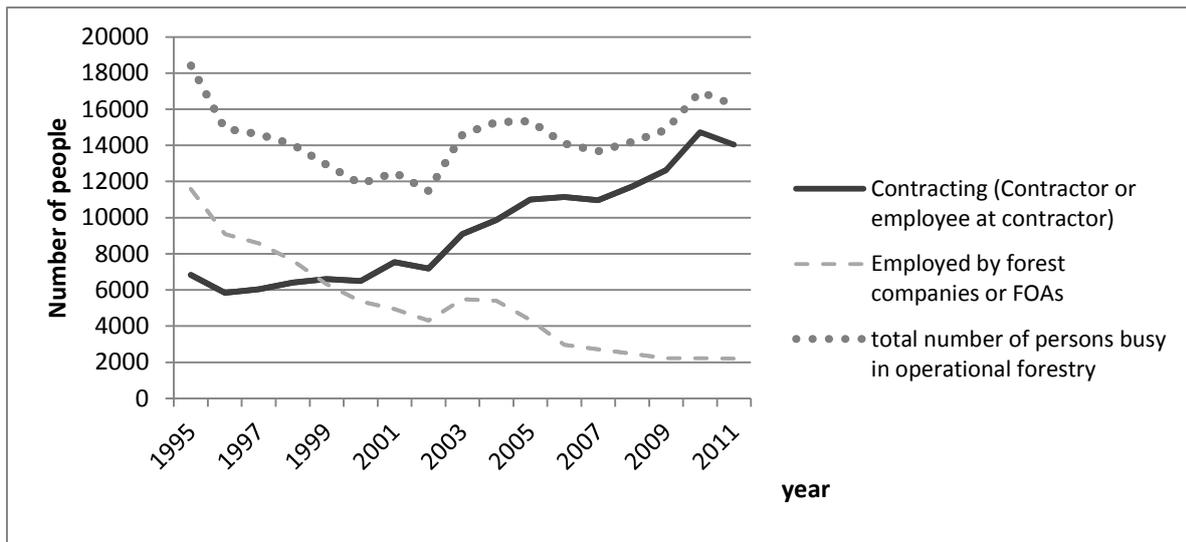


Figure 1. Number of people busy in forest operations; silviculture and logging. Year 1995 - 2011 (Board of Forestry, Sweden, 2012)

Over a relatively short period of time, the forestry in Sweden has transformed structurally. Most people that used to be on the permanent staff of operational forestry are now contractors, offering logging, regeneration, cleaning, sitepreparation or timber transport services to their former employers. These contractors are all very small, relatively to their customer (Furness-Lindén 2006) (Table 1).

Table 1. Average Swedish forestry contractor within the different forest operations – author's estimate

	No. of employees incl. owner	No. of customers	Estimated value of equipment (USD)
Logging	4	1	800 000
Regeneration	seasonal: 10 - 100	1	20 000
Cleaning	2	1	5 000
Site preparation	2	1	400 000
Timber transport	2	3	200 000

Now, instead of bearing production costs of forestry internally, companies are buying services of logging and silviculture. Just to cope with the desired yearly logging, a company cutting 3 000 000 m<sup>3</sup> wood needs to sign approximately 100 logging contractors. To this, silvicultural operations inevitably need to be contracted as well as hauling and planning etc. To summarize, an industrial forestry customer need to sign several hundreds of contractors to keep the business running. In Sweden, parties would typically sign blanket or process-type contracts´ running over a period of several years. The products traded are relatively homogenous and standardized, and the elements of the different contract services are quite repetitive and distinct.

Since many are former colleagues, and since it is a geographically spread out business, the personal relationships are close, and the business has been able to rely on common practice and mutual understanding. However, as older generations retire new entrepreneurs and salaried employees are entering the business. They were never colleagues, they do not always know “the way we always have done it”, they are skilled when it comes to computing and information technology and want to discuss business economics rather than operations.

Scrutinizing the existing contracts - even though most did have a written contract specifying the agreement, these contracts varied widely in extent, comprehensiveness and even legal quality. The payment was most often defined as a fixed price/unit produced. If anything was written to specify the arrangement further, most was focused on the technical or operational tasks. Very little was specified regarding communication, information and administration. It was often difficult to overlook the final agreement since the request for tender document, the RFT, and client requirements were intertwined text- and structure-wise with the received tender and also - together with negotiated corrections - functioned as contract.

Preparing for the future, the business foresees major parts of operational forestry based on contracted work; perhaps also functions like timber contracting and planning will be outsourced. Hopefully,

contractors from other businesses will place tenders and perhaps there will be completely new services traded. Knowledge on sourcing and strategic purchasing is likely to deepen.

Despite features of common practice and mutual history the operational forestry of today is based on contracting. This paper does not analyze the initial outsourcing decision further – it focuses on the fact that forestry by all formal and legal means has become contracting business and that the future indicates that it might be beneficial for the industry to refine contracting skills and tools.

## **Rationale**

When two parties agree on a deal, there are inevitably common interests and needs. The agreement needs to be legally correct and in harmony with law and it needs to be written and defined in a way that both parties understand what has been agreed upon.

Industrial services are probably among the more complex products to trade. However, the more complex the product, the more important to define because if parties do not know what they trade, how can they evaluate the deal or decide upon an appropriate compensation?

Although literature on outsourcing is extensive, the number of operational works on trading of sophisticated services is relatively small (Kadefors 2008, Zammori et al 2009). Most research addresses outsourcing and use of third party services in a theoretical way, focusing on the strategic set-up of the (re-engineered) supply chain and benefits or draw-backs of principles of outsourcing. However, there is an important gap in technical literature; if the technical and legal details of the arrangement are not correctly in place in a legally sound contract, the back bone infrastructure supporting the ever-so strategically clever arrangement is lacking.

This paper describes a Swedish case from the relatively young, still evolving contracting business of forestry. The aim of this paper is to address the concept of contract standardization, believed to be a useful tool in this and similar industry contexts and to picture the process of developing such contracting tools.

The paper refers to the Swedish situation, where the legal role of the formal contract differs from that in common law countries such as e.g Great Britain and the USA. The paper refers only to the business to business market.

## **THE THEORY BEHIND STANDARD CONTRACTS**

### **Market mission – lowering transaction costs**

Outsourcing is the result of a strategic choice; to produce in-house or to use external production capacity. The latter will be chosen if transaction costs do not exceed in-house cost of production. The theory of transaction cost economics is a common theoretical framework when discussing the costs of participating in a market, i.e. the fee to trade on any market place (Coase 1937, Williamson 1985). Transaction costs can be divided further. Commonly suggested sub-groups of transaction costs are (Dahlman 1979, also cited in Wikipedia):

- Search and information costs. Costs such as those incurred in determining that the required service is available on the market, who has the lowest price, etc.
- Bargaining costs. Costs required to come to an acceptable agreement with the other party to the transaction, drawing up an appropriate contract etc.
- Policing and enforcement costs. Costs of making sure the other party sticks to the terms of the contract, and taking appropriate action (often through the legal system) if this turns out not to be the case.

On the perfect market, there are no transactions costs, the costs arising are all related to pure value adding production (Williamson 1985). Since no market actor, market or supply chain can profit on transaction costs, economists assume that all rational market places benefit from lowering transaction costs. Dahlman (1979) summarizes that in search of Pareto improvements on a market place it would be beneficial “if some policy, whatever policy, could be devised that will decrease on net, the cost of transaction, whether they be due to set up and transfer costs or imperfect information”.

### **Transaction environment in contracting**

Surprisingly few generic studies have been carried out on transaction efficiency within contracting (Eriksson 2006, Eriksson and Laan 2007, Kadefors 2008). Refining thoughts of transaction costs

(Williamson 1985, Eriksson 2006), by analyzing Swedish contracting, Eriksson and Laan (2007) created three generic types of transaction environments and the most efficient market place behavior for each set up. See Table 2.

### **Contracts for good or for bad?**

An extensive contracting procedure can be questioned, being in itself a transaction cost driver. Thus, does the use of such tools and methods lower the transaction costs enough to outweigh the added costs of the procedure?

Kadefors (2008) analyzed the developing Nordic facility management contracting market in search of factors important for the development of a productive contracting culture. She concluded that there has been a long tradition in research on interorganizational collaboration to downplay the role of the formal contract. Not only have complete and specified contracts been regarded as inefficient and bureaucratic, contracts have been considered detrimental to trust (Auclakh and Gencturk 2000, Malhotra and Murnighan 2002, Eriksson 2006, Kadefors 2008). However, Kadefors (2008) and many other (e.g. Poppo and Zenger 2002, Vlaar et al. 2006, Argyres and Mayer 2007) find evidence of the opposite. They conclude that contractual structure and detailed specifications facilitate joint sense making between parties and inevitably assure that parties consider and articulate all aspects of the agreement. Not only does this stimulate common process understanding, agreeing on the contract specification will invite discussions on process improvements and mutual learning. Several studies also indicate that a structured contracting process itself can foster trust (Barthelemy 2003, Blomqvist et al. 2005). Bröchner (2003), stated that the “major cost reductions that are sometimes reported when services are outsourced for the first time should be explained mostly by effects of the initial effort of specifying requirements and...if well-organized it brings up the current set of service priorities”.

According to Eriksson and Laan (2007), in some transaction environments, the market benefits from formal and comprehensive contracts since it lowers - on the net - the transaction costs (table 2).

In conclusion, there is research indicating that extensive contracts and contracting procedures can facilitate a market place. This might be particularly true on evolving, learning, market places that are not fully stabilized and where actors have not yet fully sorted out the traded product and its values.

### **Contract standardization - a delicate trade off**

Assuming that a market place will benefit from extensive contracts (lowering transaction costs), and that a formal contracting process in itself can create value and business trust, yet trading repetitive and relatively homogenous products, a rational actor or market will seek the optimal tradeoff between industrial repetitiveness and deal-specific flexibility. Questions of contract standardization arise. Several businesses and regions explore how to use the efficiency benefits from contract standardization without hindering flexible discussions and contracting agreements between parties trading complex services (e.g. Rauch 2002, McNieven 2003, Mitchell 2006, Rogers 2007, Mason 2007, Zammori et al 2009).

Standardized contracts are found in a variety of business to business trading situations. If surviving and being used and refined over time, standardized contract schemes within business is good evidence of presence of transaction costs and of a market place striving to lower them.

### **Agreed Documents – industry specific standard agreements**

General conditions are standardized writings. Typically they consider e.g. liability, cancellation, damages on third party, delimitations on warranties, right of interpretation and actions undertaken in case of dispute. By referring to this set of standard formulations in a specific contract, they are included in the agreement. Three levels of standardization of such general conditions can be distinguished, with increased level of sophistication.

1. The company-specific level; a forest company would have some general terms and conditions when buying stumpage timber.
2. The one-party-united level; the Swedish Association of Road Haulage Companies develop “Alltrans2007”, a set of terms and conditions for members to make use of when offering transportation services (Anon.b, 2007).
3. The *agreed documents* at business to business level. Agreed documents are by juridical definition an industry-specific, standard agreement, negotiated between buyer and seller parties on a market place. Typically, these are formulated by a committee, including buyer and seller representatives from major companies or organizations of

the industry. Because of the two-sided negotiation, the risk of a battle of forms is minimized, which is opposite to the two less sophisticated contract types above.

Sweden has a long tradition of agreed documents (Kadefors 2008, Rådberg pers. comm. 2009, Anon. 2008, Anon 2007a, and b, Anon. 2006, Anon 2004a, b and c, Anon. 1996) These are obviously successful since common law – despite of really old contracting industries like construction - still keeps legislation of trading of business to business services scarce and refers to the use of such standard agreements (Rådberg, pers. comm. 2009).

In 2007, the author, at the time researcher at Skogforsk (the Forest Research Institute of Sweden) suggested to the business parties of forestry contracting to jointly develop a standardized, industry specific, contract scheme.

### **DEVELOPING THE APSE SCHEME – THE SWEDISH CASE**

In 2007, following a pre study by Furness-Lindén (2006), a group of representatives from Swedish forestry was formed, formally ordering this work. The group consisted of representatives from different large consumers of forestry services and of representatives from the association of contractors, SMF.

In order to benefit from the extensive standardizing procedure, it was suggested that the traded product should be “mature”, i.e. that the actors on the market should know the typical elements by heart. The work therefore initially targeted the following typical contracting situations; logging, mechanical site preparation, manual regeneration (planting and sowing) and cleaning.

To assure a useful product, it was decided to iteratively report work along the way to the committee and to develop the scheme in working groups with representatives from the business. Initially, some overall aims and guidelines of the project were explicitly defined in the committee. It was stated that the project aimed to:

1. Minimize uncertainty in the contracting situation, thereby minimizing built-in “unnecessary” risk premiums within the value chain
2. Cutting non-value adding time in the relatively repetitive contracting process
3. Develop first version of a written down practice; a concrete frame-work and contracting tool to further develop, adjust and refine over time
4. Help enhancing “agreement” skills, confidence and professionalism in forestry, thereby attracting skilled contractors and employees by signaling a professional forestry contracting market
5. Clearly acknowledge the industry-wide scope since the success of the project was believed to be depending on the acceptance and trust from all actors on the market place

It was also articulated that the model developed should aim at securing legally sound, comprehensive contracts, tailor made for forestry. Yet common knowledge and vocabulary of professional contracting should be used. Finally, the model should function regardless of procurement technique.

### **In search for inspiration – the FM business**

Since business agreements and contracts need to be harmonized with law, role models were searched for within the country, the common denominator being the national legislation. In the process of developing a generic contract scheme for use when contracting forest operations, the pre study searched out other contracting industries within Sweden. Swedish standard contracting scheme of construction which have been used for some 80 years, gone through several revisions and really is considered common ground in construction was studied. Sprung from this, the facility management (FM) business caught particular attention (Furness-Lindén 2006).

Several features of FM were considered interesting and somewhat similar to the forestry contracting (Table 3).

Table 3. Common denominators between facility management contracting and forestry contracting.

<b>Process contracting</b>	Both FM and forestry contracting are characterized by process rather than project production (cf. construction), contracts are usually signed on 3-5 years and one client will contract several contractors.
<b>“New” market place</b>	The FM contracting industry was created during the 1980s and 1990s, stemming from outsourcing of former in-house production with the aim to reduce production costs.
<b>National market place</b>	The vast majority of both FM and forestry services are produced and consumed in Sweden. The service market therefore primarily needs to develop in harmonization with national culture and conditions.
<b>The Aff-system</b>	There was an industry-specific contracting scheme, the Aff system ( <a href="http://www.aff.nu">www.aff.nu</a> ), in place, developed during mid-nineties by the actors of the market place. The Aff-system seems appreciated by the market place, now revised twice, expanding and growing in importance (Bröchner 2003, Kadefors 2008).

There are also some important differences between forestry and FM (Table 4). Stakeholders claim two prevailing motives for the Aff-initiative (table 3) in the nineties: i) they needed to define the products traded in order to achieve comparability of services offered on the market place of FM; ii) they needed basic rules of the game (Hammarlin pers. comm. 2007, Lindberg pers. comm. 2009, Lindén pers. comm. 2009). Initially, stakeholders of the market place, FM contractors and FM buyers gathered and formed a development committee, the Aff Committee. Today, stakeholders testify that the Aff system is a well-accepted common language for the industry, that procurement processes are more efficient due to transparency and comparability and actors mutually increased contracting skills. The Aff Committee also functions as a forum for business development. (Kadefors 2008).

Table 4 Differences between the FM sector and forestry.

<b>Fixed geography</b>	In FM, the typical objects are more tangible, remaining at the same geographical place. In forestry, the objects, work sites, will vary during a contract period, and seldom be completely known when agreeing on a business deal.
<b>Strategic importance</b>	It is debated (Kadefors, 2008, Lehtonen and Salonen, 2006) to what extent FM is a core value adding process of an outsourcing firm while for example logging could be argued to play a major role of the very value production process. However, in operational search for tools to support the market place of forestry contracting, the initial strategic outsourcing decision was not questioned further.
<b>Knowledge about agreed documents</b>	Sprung from the world of construction, actors in FM industry were all familiar with the very well accepted standard scheme of agreed documents, AB, and the General Specifications of Material and Workmanship, AMA (Anon. 2008).

## Elements of a standardized contract scheme

In Aff and other standard contract schemes, three types of standardized elements are present (Mason 2007, Zammori et al. 2009, Kadefors 2008, Hammarlin pers. comm. 2007); i. fixed rules, ii. fixed definitions and iii. fixed structures. Combining these components is the way service trading markets have tried to balance the industrial benefits of standardization with the need to keep flexibility in the specific case.

- i. The rules of the game, quite generic, still much more industry-specific than ever the law, is held as an accepted ground zero of the deal. This is true only if they are referred to in the contract. The rules of the game do not say much of the specific product traded, but they tell about how the product should be traded and how the law should be interpreted in the industry. Most sophisticated, these are two-sidedly negotiated agreed documents and used widely within the business sector. Parties know them, seldom question them and overall rely heavily on these basics. Typically, they are owned by a well-balanced committee, decided and negotiated once, and thereafter revised when needed, e.g. every 5-10 years.

- ii. Sometimes, the definitions are included in the Agreed documents to facilitate a more stringent interpretation, whereas in e.g AMA (table 4) they stand alone as a major part of the standard scheme. Definitions are used to help “reify” the intangible service at hand, thereby create comparability of different offers and tenders and increase comprehensiveness between parties. This constitutes the common language that stakeholders of the FM business refer to as valuable.
- iii. A contract structure or contract scheme is considered a help in two ways; i) it assures parties trading that no important feature is forgotten in the contracting discussions; ii) it helps to structure the extensive documentation needed to agree on complex services. Also, with a commonly accepted structure in place, parties know where to look for the different features and specifications, adding to comparability as above and general business trust. Within the scheme, you find e.g. a suggested way to write a preamble, suggested description structures of the Service Level Agreement (SLA), the contractor, the objects, the operational work, the administrative work, procurement process etc.

### The suggested Scheme

The first sketch of a contract scheme was simply a suggestion of a set of agreed documents for all of the targeted products accompanied by a product specification structure, developed for each of the different products. The committee accepted this. Also, the committee accepted the idea of a template to inform and structure a tendering/procurement process.

Following this, the development work was divided into two parallel processes; one process focusing on legal stringency and professional agreed documents and one process in which technical expertise was needed to produce comprehensive templates of the product description. Two project groups were formed. One heavy on juridical expertise, both on Swedish agreed documents in traditional contracting/FM and on legal aspects from the forestry, and one with forest operation expertise with representatives from contracting staff in forest enterprises and in Forest Owner Associations.

A third process was added and clearly expressed parallel to the refining of the scheme and negotiation sessions of the Agreed documents; preparing for implementation.

### Agreed documents of Forestry Contracting

In practice, the agreed documents needed to be written by legal experts because they will eventually be interpreted by the same. A few guidelines were early decided upon in the group, narrowing the focus and creating common understanding of the task ahead (Table 5).

Initially, the client collective, who held employed juridical expertise within their organizations, formed a first blue print of Agreed documents for forestry based on the already commonly known Swedish legal custom of Agreed documents. In iterative processes between client collective and contractors, the document was rooted and refined. After each working session, the refined document was actively accepted by each and every organization in the committee. An important purpose of this process was to unify the client-collective. This was believed to result in a process that initially took time, but in the later negotiation stages, was expected to run smoothly since the contractors were facing a relatively unified party to negotiate with.

Table 5. A set of orienting questions with the purpose to create a common platform of further discussions and development of the Agreed Documents

Should the document constitute a full and comprehensive agreed document or only target frequently discussed issues and problems in forestry?	Yes, a “full” AB-document
Should this document alone be good for commercial thinning, final felling, site preparation, regeneration and pre-commercial thinning? Should road construction be contracted using the already existing AB 04/ABT 06?	Yes to both questions
Should the document merely “codify” common custom of today or should it also aim at further development of the custom of today?	Codifying is enough at this point
Should the document be written in a “user friendly” manner possibly at the expense of the juridical stringency?	No, it should be a juridically precise document
Should the document be a strict legal document or should it also incorporate some important policy issues of the industry?	Some policy indications as well
What contracting type should the document primarily target; traditional contracting or turn-key set ups?	Classic contracting, no turn-key
Should the document contain a preamble and definitions?	Yes

As a second step, a smaller client group was formed in which there were two representatives from client legal expertise, and two from forestry staff. This group negotiated with the contractor representatives and their legal representative to finalize the document. Each of the committee representatives actively signed the final version, thereby executing the first version of Agreed Documents of Forestry; ABSE 09 (Anon. 2009).

In December 2009, organizations representing logging volumes of approximately 45 % of annual cut and 50% of productive forest land, adopted the agreed documents (Furness-Lindén 2010). As of April, 2012, the usage is steadily increasing. ABSE 09 is known and incorporated widely throughout Swedish forestry contracting, and is used also by several actors not fronting in the APSE Committee (Fogdestam and Furness-Lindén 2012).

## Templates

While the agreed documents were aiming to function for all targeted forestry services in general the templates developed needed to target each forestry service respectively. The group started out focusing on the logging contract, since logging carries the vast majority of the costs of operational forestry. And if the logging templates came out well, the silvicultural services would follow, using the same structure. Furthermore, other contracted services such as forest fuel handling or fertilization probably could be defined on the developed basic structure as well.

By analyzing contracts already in use on the market and by looking at the Aff scheme, important generic components of an industrial process contracting service were extracted.

First – the **scope** of the product as far as how much it will vary in in geography, area, volumes and pace over the contracting period. Second - the **technical specification of the operations**. It seemed beneficial also to cut out a component focusing on **equipment used**, especially on contracts where the machinery features and the computer software are of great importance to the customer. A fourth element was the **administrative chores**, interestingly un-specified in earlier contracts, but carrying a great portion of value for the parties. Specifications and **descriptions of the contractor**, as well as invoice handling and formats were also defined as important components of the deal. Finally – the **economic compensation** of the product naturally needed to be articulated.

Within every generic component, sub-headings covering common elements of the targeted operation (here; logging) were defined.

After articulating these components and sub-components of the logging service contracted, a skeleton scheme was suggested and tried in laboratory purpose on a couple of different committee organizations. The tests resulted in several text suggestions on each heading, free to use when writing or – to replace with own wordings. Also, brief instructions were formulated under each suggested heading. Following the same method and using the same six component headings, a second project group was formed, developing templates for cleaning, site preparation and regeneration.

It was stipulated that in order to achieve recognition of a common standard structure over time, headings were free to exclude from a product description when using these templates, but it was not allowed to switch or rename headings within the template. It was also free to add new headings or sub-headings if needed.

## The Implementation process

The clients, all large scale actors, and the Contractor Association, had an important process to go through parallel to the actual development project since the internal acceptance in each and every organization was considered important. Also, forestry staff of the company or organizations was not always in day to day discussions with the legal expertise. Therefore, a process to gain internal approval for agreed documents – also within the legal expertise – was initialized. Resources were spent on informing, discussing and work-shopping around the general thought of contract standardization and agreed documents.

Even though this process stretched time, it was considered very important to facilitate these discussions, since the implementation success or failure depended on the acceptance and belief of the market actors. It is also important to stress that almost all committee members already before had a more or less worked through contract, so implementation of a new structure and agreed documents inevitably called for in-house adjustment work as well. Also this needed acceptance.

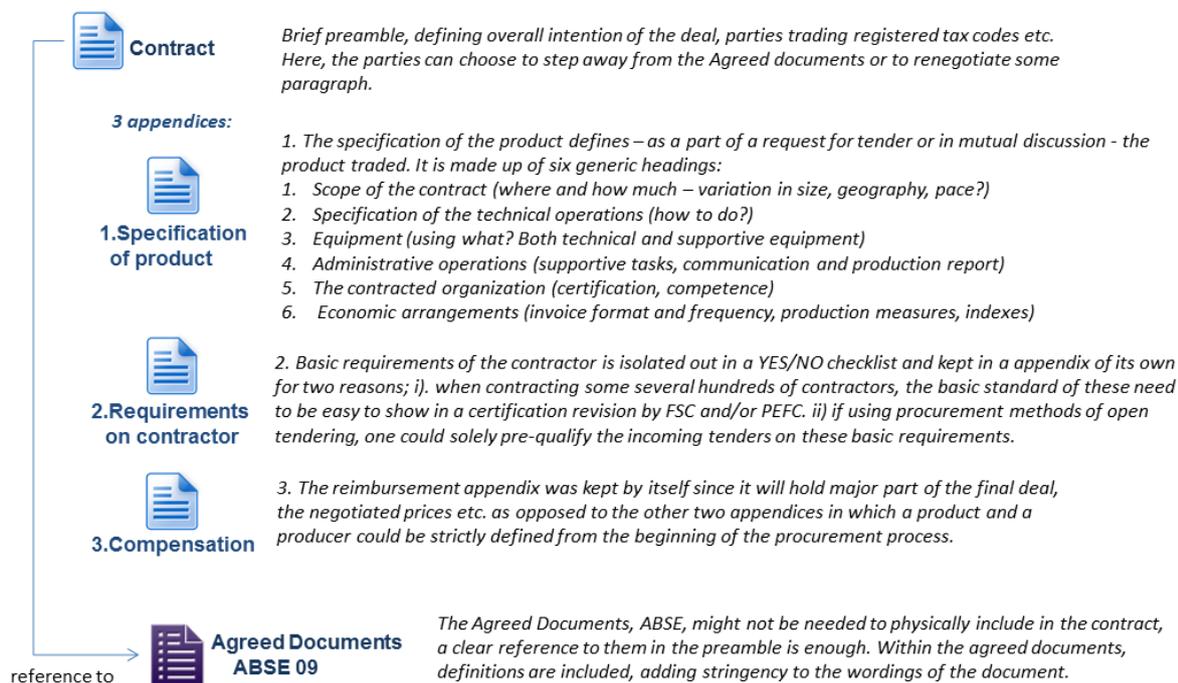


Figure 2 Model – the final APSE Scheme

## The final APSE Scheme

Tailor made for forestry, the final contract structure (figure 2) consisted of four templates and a set of mutually negotiated and hence content-wise fixed Agreed Documents of Forestry, ABSE. Along with the contract structure, a template for procurement instructions was developed. All documents can be found at [www.apse.se](http://www.apse.se).

## CONCLUDING DISCUSSION

### Hunting down transaction costs

Operational forestry in Sweden is by all formal and legal means contracting business. To stay competitive, this leaves the actors on the relatively young forestry contracting market with a mutual goal – to minimize transaction costs when trading contracting services. This in turn adds new disciplines to master to the business of forestry.

It is assumed that despite the possible strategic importance of operational forestry, the industry (by all means designed by the dominant clients) took an economically rational decision when outsourcing. That is – transaction costs and cost of outsourcing risk are believed to be significantly lower than in-house production. However, it seems that the market since the outsourcing took off has experienced the lowered costs that come with more flexible production resources (that is the result of slimmed assets at clients and equivalent possibilities to specialization on the contractors). This trimming of production costs outweigh the transaction costs added. However, in this new set up, there are new cost savings to take care of, when focusing on mastering and minimizing transaction costs. Also - research suggests that mastering transaction costs can add additional value, when parties in the process become aware of how to trim the product traded even further.

### Transaction environment of forestry

In professional trade of complex services, where the outcome of the trade depends very much on interdependencies while producing and consuming the product, research strongly suggests a market place stabilizing either at the social or process control set up. The forestry contracting scene is not yet stable,

since there is an ongoing shift of transaction environment affected by the modern history of the relationship between the parties trading. As older generations, who entered the era of outsourced production as former employees/employers, retire, the social control and impact loosens up. Younger generations show up at the contracting market place, not carrying the rucksack of this former close collegiate relationship. Modern workforce moves more quickly, both in client and contractor organizations. Oral or very informal contracts, which once functioned well, create more problems than value today, both for the contractor when for example borrowing money for new equipment, and for the slimmed client company, needing to be able to rely on contracted production capacity. If these trading parties were somewhat equal in dimension or bargaining power, joint venture relationships could likely occur, leaving some of the relationships in the trust-based environment. However, the dominance of the large scale clients strongly indicates that forestry contracting in foreseeable time ahead will be an authority driven business relation (Burt 1989, Furness-Lindén 2006) – a transaction environment where the contracts directly affects efficiency. Another indication of this is the fact that in foreseeable future, the buyer of the services will likely keep skilled personnel and continuously invest to retain a high level of know-how of the outsourced production process.

In such a process control set up (table 2), the market will need contract formalization, making the agreements legally binding and making the contracts easier to interpret and enforce (Auclakh and Gencturk 2000, Eriksson 2006).

### **The origin of a standardization scheme**

Interestingly, two independent initiatives on branch-wide contract standardization within forestry were taken in Norway and Sweden during 2007. It seems like there are empirical evidence that in a maturing industrial contracting market, standardization schemes are likely to occur (Kadefors 2008, Rådberg pers. comm. 2009, Anon. 2007a and b, Anon. 2006, Anon. 2004a, b and c, Anon. 1996). It is known that any market place will strive towards transparency and comparability, making the most use of competition. Much of the contracting product is an intangible service. Standardization of two kinds seems likely to occur; product definition/understanding and commercial trust building.

Economic theory (Coase 1937, Dahlman 1979), as well as other large contracting industries in Sweden, suggests that standardized contracting schemes are tools that will help enhance market transparency, supplying the market with symmetrical information and lowering actor experienced uncertainty, hence facilitate a more cost efficient contracting market. Also research suggest that an extensive, yet structured contracting process, might add value, by forcing the parties to articulate important features of the product traded (Poppo and Zenger 2002, Bröchner 2003, Vlaar et al. 2006, Argyres and Meyer 2007, Kadefors 2008). As is the case with all standardization, one should acknowledge the risk of ending up with inefficient deals when parties are relying too heavily on standard wordings, without checking accuracy for the specific situation (Vlaar 2008).

### **Targeted transaction costs on the market of forestry contracting**

The development work of contracting standards within forestry included negotiation of a set of Agreed Documents. They are believed to function as a key component of any contract situation and thereby to form a reliable ground zero in contracting market places. Not only do such standardized wordings ease the repeated and numerous contracting processes. Development of common basic terms and conditions are highly motivated in any contracting industry since business to business common law regarding traded services is scarce. Agreed documents on such markets therefore would contribute to lower market place uncertainty i.e. lowering embedded risk premiums.

To further assist contracting process efficiency and assure comprehensible contracts, standardized templates, structurally fixed, but content-wise free to design for the two parties dealing, were added within the developed forestry standard. The need to professionalize and enhance general contracting skills within the business was articulated and one of the main purposes of the project. The templates were considered a tool in this “teaching” purpose and also to further position the forestry contracting sector as a professional contracting market place. Also, the Swedish work was influenced by contracting custom and the Aff-system in particular. Being an interesting inspiration, the Aff-system sprung from an explicit urge from an evolving market to compare products with a heavy service component.

Using Dahlman's (1979) three types of transaction costs, the initiative of APSE could be argued to target the policing and enforcement costs; even though formal legal actions have been rare, a lot of energy has traditionally been put on non-value adding activities such as arguing whether or not the agreed service is actually carried out the right way, what extra reimbursement that should be motivated for a specific action etc. Furthermore, the severe storm-fellings in 2005 helped pin-pointing the area of contracting, leaving a few costly examples of the importance of serious and clear contracting.

Also search and information costs and the bargaining costs were targeted within the ambitions from the APSE-committee. Over time, a well-known declaration of content of the service offered and hence the comparability of several offers was hoped for. Also the urge to create reliability and avoid unnecessary risk premiums was expressed. The physical work to nail the contract is believed to be rationalized over time, along with parties knowing the scheme and gaining contracting skills using the scheme. Even if more time will be spent on going through the details of the agreement in the contracting situation, these details will to a larger extent be value adding details, rather than repetitive price discussions. Once the deal is set, fewer discussions are likely to occur later on in the running contracting relation.

Another explicit target was the fact that the forestry needs skilled contractors and operators in the future. To have them coming, forestry needs to demonstrate a professional business. If not, the fear is that the cost of the very product (not the transaction costs) will increase over time due to bad skills and limited supply.

### **Generic recipe of a contracting scheme**

Independent of service traded, two overall aims seem universal in initiatives within service and contract standardization on market places that believe in competition as driving development – comparability and rules of the game. Comparability in order to help the market place define and correctly price offered products, and rules of the game to understand and capture business risk.

In development of a standard scheme for such a complex product and trading situation as industrial contracting, apparently one will always face a trade-off between an economically motivated urge to rationalize (standardize) and a just as economically motivated need to tailor the specific situation at hand.

Contracting market places have tried to optimize this balance by using a mix of three standardized ingredients; standardized text, standardized terms and definitions and standardized structures. By partly standardizing contractual arrangements, the parties can fast-forward to sections of the specific agreement that need to be designed specifically.

By referring to standardized terms and definitions, they help creating a stringent contract. A suggested generic contract scheme could be as of below;

1. Agreed documents – standardized negotiated terms and conditions
2. A product definition with standardized structure;
  - a) scope
  - b) technical operations
  - c) equipment specifications
  - d) administrative operations
  - e) economic arrangements
3. Requirements on contractor could be kept within the “product” or as a separate appendix with standardized structure
4. Price and compensation for the defined product

### **Driving industry development?**

In conclusion, contract standardization schemes often seem to be well functioning products developed by industry-expertise in practice.

A committee owning the scheme will inevitably become a forum for industry to discuss business logistics on the contacting market. Thus, not only is contract standardizing believed to contribute to lowering transaction costs, it might also facilitate the discovery of innovative transaction values and thereby increase leverage of the contracting market set up itself.

Probably one of the major benefits of a contract standardization project is solely that the parties in industry discuss and put a focus on business logistic issues as such (Vlaar et al. 2006, Furness-Lindén 2006, Madhok 2007). Thereby, such development project in itself functions as a strategic driver of industry development.

Relatively little is written in scientific literature about contracting schemes and agreed documents. However, in a world where service business is growing, and where increasingly complex services are

traded, aims such as cutting transaction costs by enhancing business trust, improving communication and understanding between stakeholders, improving effectiveness of contracting activities and processes, improving quality measurement and output delivery, developing management and customer service tools and systems or harmonizing different languages seem universal.

This article should be considered in this context, documenting operational execution of outsourcing strategies and effective contracting of complex, industrial services.

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