

# THE EFFECTS OF COMMUNICATION ON TIMBER SUPPLIER'S RELATIONS WITH A CONSTRUCTION COMPANY

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During recent years the profitability and the possibility to increase the value and level of raw material processing in the Swedish wood working industry has been discussed. Parallel with this discussion the need for increased efficiency and a reduction of costs in the construction industry has been at focus. An use of industrialized building techniques and systems has been suggested, as an outcome of these discussions initiatives to develop new wood based products for the building industry is taken. The aim is to analyze the effects of communication on the supplier relations in the Swedish timber construction process. The empirical material was collected through interviews where a large number of representatives from the wood working and the construction industry participated. A construction project is traditionally divided into distinct phases as a “relay-race”. The greatest possibility to affect the economy in a construction project is known to occur the early phases of the project. The results show that the highest impact on these phases is achieved by mutual development of construction systems and new working methods. It is evident from the results that effective ways of sharing information are needed. The communication process should carefully be designed so that information is transferred using rich, personal media such as personal contact between the communicating participants. This is most significant for a successful communication at the beginning of each phase.

Keywords: Business strategy, Communication, Housing, Information management, Project management.

## INTRODUCTION

There is increasing recognition that traditional procurement methods result in costs spiralling out of control along with the recognition that quality and safety can be improved by parties working more closely together (Black, Akintoye and Fitzgerald 2000). Working with suppliers can enhance the ability of the organisation to meet the client's programme, quality, flexibility and cost requirements (ibid).

Considering that construction projects are risky due to the invariably unique design, number of organisations involved and unknown site conditions, communication can be described as the glue that holds together a channel of distribution (Mohr and Nevin 1990). The role of communication within marketing channels is an important issue from both a managerial and a theoretical perspective (ibid).

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Effective communication can help construction companies to understand each other's requirements and working practices, which can lead to fewer misunderstandings. It helps to generate trust between a company and its suppliers, customers and other businesses (Hong-Minh, Barker and Naim 2001).

The aim of this paper is to analyze the communication process and the effects of communication on the supplier relations in the Swedish timber construction process. The paper presents a model for designing the communication between the construction- and the wood working industries which might lead to a higher degree of co-operation and thereby better quality and lower costs for misunderstandings.

## THEORY

### Thrust and communication

Currently, housing supply chains are fragmented and underpinned by poor communication, adversarial relationships and a lack of trust and commitment (Hong-Minh, Barker and Naim 2001). As the different trading partners cannot completely trust each other, they try to limit the exchange of information as much as possible (ibid). The relationships between the various disciplines within the construction industry have to be based on trust, mutual commitment, understanding of each other's individual expectations and an open book culture (open exchange of information) with clear up-front problem resolution (ibid).

The success or failure of a construction project's execution is argued to be dependent on the understanding of the information needs and requirements of the different parties (Love, Li and Mandal 1999). Inadequate, incomplete and outdated information can lead to delays and extra costs during the design stage but also during the execution of a construction project (Hong-Minh, Barker and Naim 2001). One solution to all these problems is to improve communications both between and within the participating companies (ibid).

Once trust is established, firms learn that coordinated joint efforts will lead to outcomes that exceed what the firm would achieve if it acted solely in its own best interests (Anderson and Narus 1990). Firms that have developed strong trust in a relationship are more likely to work out any disagreements amicably and, in fact, accept some level of conflict as being “just another part of doing business” (ibid).

### A model of the communication process

The communication process can be described by different structured models. In this paper the following model, originating from system theory (Schoderbek 1999), is used to describe the communication process, figure 1.

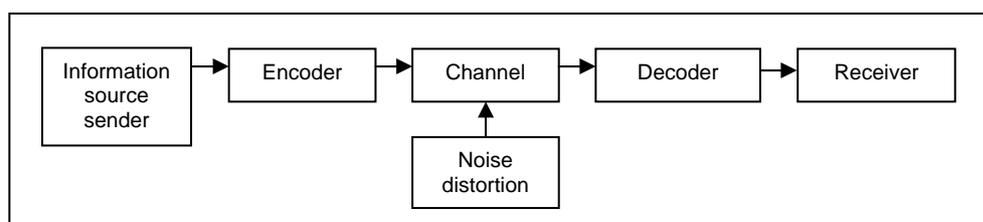


Figure 1. The communication process (after Schoderbek, 1990).

The sender and receiver exchange information through a certain channel. The sender selects the information that is to be transmitted. The channel is the medium used for sending the message from the information source to the receiver. If necessary the information is coded before it is transmitted. The selected channel has a certain capacity. If the receiver is unable to interpret the message in the form it is sent the message has to be decoded. The channel can be exposed to noise distortion. The noise distortion can cause interruptions in the information flow or loss of certain information. When the sender and receiver communicate it is important that they both have access to the same language or system of symbols. There have to be a common agreement as to the language or set of symbols to be used. The system of coding and decoding of the messages are therefore important for the communication process. The information can be coded, less coded or un-coded. Un-coded information is easy to understand while coded information often demands special skills to be fully understood.

**Communication and management of information in organisations.**

There are different reasons to communicate information in an organisation. Two important reasons are the need to reduce uncertainty and equivocality in the organisation. Uncertainty can be described as absence of information, a lack of facts while equivocality means ambiguity, the existence of multiple and conflicting interpretations about an organizational situation (Daft and Lengel 1986).

A model describing how organizations handle dual information needs, for uncertainty and equivocality reduction, both for obtaining objective data and exchanging subjective view is presented (Daft and Lengel 1986). They propose that seven structural mechanisms form a continuum with respect to their relative capacity for reducing uncertainty, or for resolving equivocality for decision makers in the organization, figure 2. Group meetings, integrators and direct contact represent rich media while formal information systems and rules and regulations (like building codes) represent less rich media. The continuum is illustrated in figure 2.

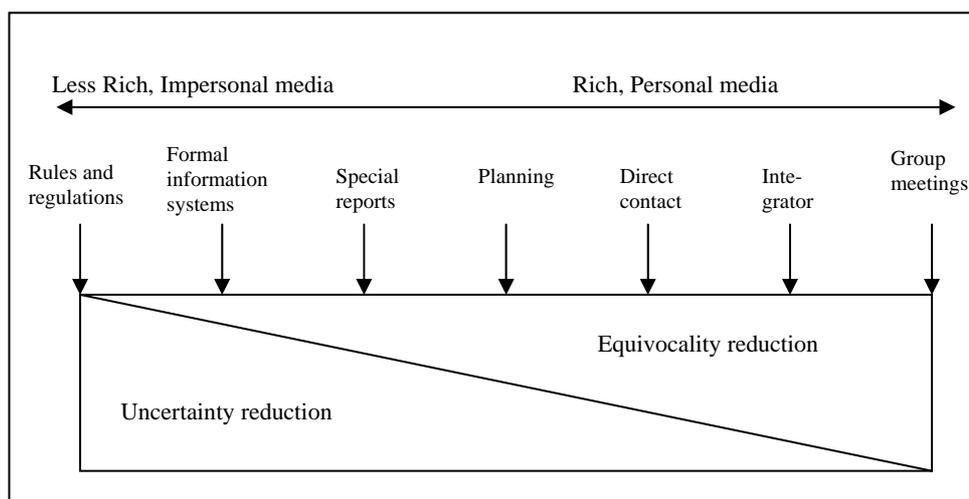


Figure 2. Model for dealing with equivocality and uncertainty in organisations (after Daft and Lengel, 1986).

## METHOD

The empirical material for the main study was collected basically through interviews where representatives from the wood working and the construction industry participated, those persons represent different professions and roles in the construction process, table 1.

Table 1: Roles of interviewed persons

<b>Roles of interviewed persons</b>	<b>Construction industry (No. of interviewees)</b>	<b>Wood working industry (No. of interviewees)</b>
Purchaser	3	
Designer	4	4
Developer	1	
Head of Marketing/marketer		6
Property developer	1	
Project manager	2	
CEO		1
Cost estimator/ production support	2	
Project developer	1	
Business Area Manager	1	
Architect	3	

## RESULTS

The basic results of the empirical study, which have formed the basis for the analysis of the cooperative and communicative processes between the actors associated with construction industry and those associated with the wood working industry through the different phases of the construction process, are presented and discussed in Cigén, 2003 and Fredriksson, 2003.

## ANALYSIS

### Communication in the construction process

The description of the construction process is based on the structure of the design build contract (Cigén 2003), thus the phases are program, bidding, design, planning, construction and delivery, figure 3.

The analysis shows that the communication is more intense in the early phases of the construction process before the construction work starts. It is also in these phases the largest amount of different actors participates in the process.

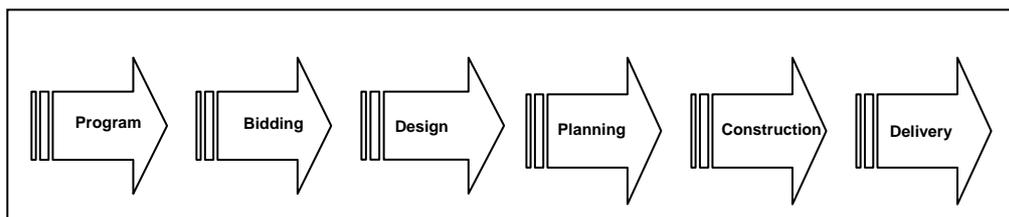


Figure 3. The construction process.

The different kind of actors has, to a certain extent, different demands concerning information. The need for information also changes, as the building process proceeds. Most of the participating actors are related to the contractors sphere and only a minority is related directly to the timber component supplier and wood working industry. The communication channels used are mainly traditional channels as telephone fax and to some extent e-mail (Cigén 2003).

#### **Obstacles for communication and cooperation during the construction process**

Results from the analysis indicate that the highest degree of interaction between the two parties occurs in the early stages of the construction process, e.g. bidding, design and planning, figure 3. This leads to an increased risk for difficulties in the communication process in these stages. All these phases includes communication of high intensity, many participating actors and exchanging of many different types of information (Cigén 2003). A large amount of communicating actors imply an increasing complexity in the communication process and an increasing risk for problem in coding and decoding information (Kadefors 1997, Ekstedt 1999).

The construction company is fragmented (Fredriksson 2003) as a consequence of the fragmentation of the construction process. The suppliers' organisations are small, compared to the construction company; this means that they have to take care of a large amount of differently coded information, which leads to problems with the decoding and demands a high degree of adaptation to different situations which causes opposition from the suppliers' employees.

A high intensity communication put high demands on the performance of the communication process. Noise (e.g. too much information), distortion (e.g. misinterpretation of information) or insufficient capacity of the information channel (e.g. information losses) can also cause problems. The coding and decoding of information has to work smoothly since time pressure often is high when communication is intense. This is particularly evident from the experience of the interviewees. Each phase of a typical construction project has a strict "time budget" and several "must be deliverables" which demand accuracy in information.

The type of information can also have a certain impact on the performance of the communication process. Simple and low coded information (e.g. time tables) is easy understood by many different kinds of actors with varying knowledge and background. Complex information (e.g. technical specifications) on the other hand is more demanding (Shannon and Weaver 1949).

The interviews indicate that the organisational cultures and traditional thinking are obstacles to co-operation between the construction company and the suppliers at all of these stages. The construction actors have a very individual focus on cutting costs at every possible mean while the suppliers focus at high volume production to increase their profitability. Therefore one way of creating better conditions for such relations might be to change the cultures. However, this would be a major task, which would probably take a long time (Fredriksson 2003). Another possible way to increase the level of co-operation might be to increase the communication between the parties at the observed key phases of the construction process. A higher degree of communication using designed mechanisms and richness of media to reduce the uncertainty, e.g. coding and decoding the information, in the early stages would probably increase the knowledge about wood as a construction material and it might

generate the necessary conditions of mutual trust, as the parties would have to have a higher degree of interaction with each other.

### **Design of the communication process**

Building systems of solid wood components are new products on the market in which the actors of the Swedish building process have little knowledge. It is a complex product and the presumptive buyer has to consider many aspects before making a decision. Introducing a complex product at the market can be compared to introducing an innovation in an organisation. The construction industry is project oriented and its innovation process is not structured, it is more flexible and action oriented (Ekstedt 1999). The construction industry structure in itself implies several structural obstacles to create an effective innovation process (Slaughter 1998, Winch 1998). As an example, informal channels and systems are often used to introduce innovations (Koskela and Vrijhoef 2001).

The project orientation, the many actors in the process with different background and the lack of structure in the innovation process clearly has an impact on the communication channels. They need to have capacity to handle a considerable amount of equivocality. It is therefore advisable to use rich media for communication especially in the beginning of a co-operation between the different actors, as rich media has the capacity to handle equivocality in the organisation (Daft and Lengel 1986).

As earlier discussed the analysis of the communication process shows that there are many actors involved and that many different types of information coded differently are communicated. These facts put some demands on the use of information. A broad spectrum of actors (as in this case i.e. all construction actors and the timber component supplier) can not have a high level of coding (Shannon and Weaver 1949).

The level of equivocality decreases when the actors has obtained a certain knowledge about the new product. When a certain level of basic knowledge is obtained supplementary information to a higher extent can be conveyed through less rich, less personal media for example a letter or a fax (Daft and Lengel 1986).

The construction process of today has a fragmented structure with loosely connected actors who only participate in certain parts of the process. These circumstances also leads to a fragmented communication process and a loss of information in the gap between the different phases (Anheim 2001). The start of a new phase in the construction process is, in some aspects, comparable to the start of a new project. The effect of these circumstances is that, to some extent, a new communication process starts as well. In the beginning, as earlier stated, there is a high level of equivocality.

Summing up the discussion of the link of the communication and construction processes, the following comments are of certain interest.

- There is an increased risk for difficulties in the communication process in the early phases of the building process, bidding, design and planning.
- The communication process should be designed so that information is transferred by media that enables personal contact between the communicating participants, especially in the early stages of the different phases of the building process.

- Communication through personal media enables immediate feedback on questions and proposals. An example of this kind of media is personal meetings.

Figure 4 shows the proposed design of the communication process in the early phases of the building process.

The communication process in the three identified phases should be designed so that information is transferred by media that enables personal contact between the communicating participants. This is most significant for communication at the beginning of each of these phases. Communication through personal media enables immediate feedback on questions and proposals. Examples of this kind of media is personal meetings.

The fact that there are many different actors participating in the building process and that many actors only participate in certain phases of the process give rise to a need for low coded information that are accessible for actors with different levels of background knowledge.

Later, as each phase proceeds, the need for personal media is decreasing and it is adequate to use less personal media (e.g. written forms). It is also possible to use more coded information (e.g. advanced technical information) as the actors have had time to gain more information according to the specific project.

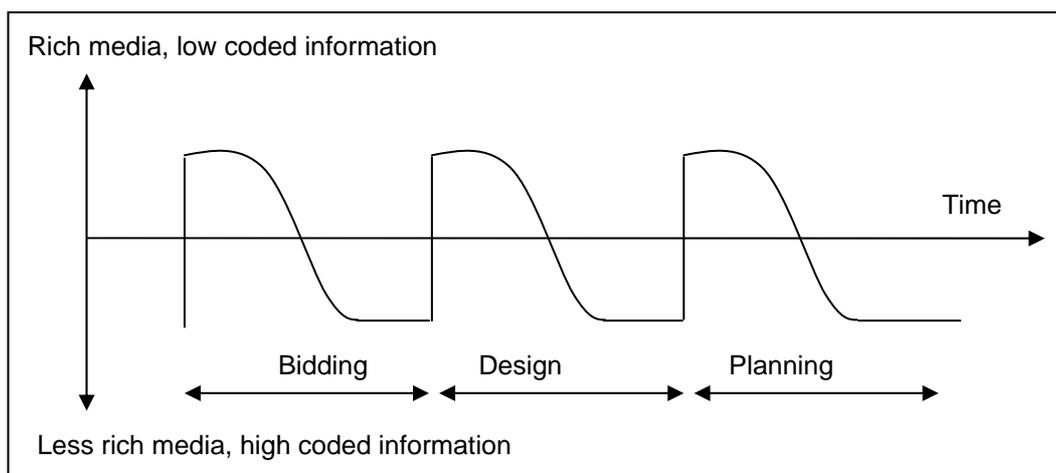


Figure 4. A proposed communication process as a function of time (construction phases) and level of coded information.

## CONCLUSIONS

During recent years the profitability and the possibility to increase the value and level of raw material processing in the Swedish wood working industry has been discussed.

Parallel with this discussion the need for increased efficiency and a reduction of costs in the construction industry has been at focus. A use of industrialized building techniques and systems has been suggested, as an outcome of these discussions initiatives to develop new wood based products for the building industry is taken.

The aim of this paper was to analyze the effects an improved communication might have on the supplier relations in the Swedish timber construction process.

A higher degree of communication in the early stages would probably increase the knowledge about wood as a construction material and it might generate the necessary conditions of mutual trust, as the parties would have to have a higher degree of interaction with each other. The results point to a possible high impact on economy as mutual development of building systems and new working methods might be possible.

To support this, effective ways of sharing information are needed. The communication process should be designed so that information is transferred through personal contact between the communicating participants. This is most significant for communication at the beginning of each phase.

This would also create conditions for the development of new construction systems, which would be more marketable, as the biggest potential for cutting costs through smart solutions lies in the early stages of the construction process.

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