

The Transfer Of Experience – Case Statsbygg

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Summary

There is an insufficient transfer of knowledge and experience between the designers and the operative personnel in real estate management. This lack of transfer of experience causes undesirable technical, functional and aesthetic solutions in the planning and design phases, and may result in increased total life cycle costs. The development and distribution of experience and knowledge throughout the organisation, for both the operative personnel and the designers, may add value to cost effectiveness in the real estate business and give satisfied users and sustainable constructions.

Part 1 of this paper will address conditions that promote or inhibit the transfer of experience. In part 2 the report addresses type of technical and procedural experience among the various phases of a construction process. The paper will also survey the company's ability to transfer experience from property management to project management in light of the knowledge management and creation of value for an organisation. It is clear that if there is no interaction between organisation people and tools, no profit will be earned. It appears that the feedback from the operational phase will be valuable in a value creation process, because about 2/3 of the experiences are related to earlier phases.

1. Introduction

The transfer of experience has long been a topic of interest in the construction industry. Part 1 of this paper recognises the conditions that promote or inhibit the transfer of experience. Part 2 attempts to identify the typical technical and procedural experiences in a construction process, and look at possible initiatives for administering knowledge and experience in a company.

Two companies took part in the study. Statsbygg is the Directorate of Public Construction and Property. Avinor AS is a state-owned enterprise and is the former Civil Aviation Administration in Norway. Both companies build and manage property.

1.1 Value Creation and Knowledge Management - A briefing

Many decisions are made in the construction process that affects the creation of value. Freedom of action decreases and alternative solutions become fewer as the construction process progresses (Eikland 2001). When the participants have differing understandings of knowledge management and give it different priority, this creates problems (Aase and Pedersen 1999). A common set of values and understanding of situations that arise throughout the lifetime of the construction project may be a necessary condition for good teamwork and the creation of value.

1.2 Study at construction and property companies

Part 1, the study conducted at Statsbygg, attempts to identify the factors that inhibit and promote the transfer of experience and knowledge management in the organisation. The interviews were structured and semi-structured. The 26 interviewees were selected according to their position in the organisation, gender and background. In part 2, K. Johannessen at Statsbygg evaluated the project on the new National Hospital, and a report was written from this presentation. The evaluation of the project on the new tower and air-traffic control centre at Værnes Airport lasted 6 days and involved all of the participants at all phases bar operation. The survey also covered the operational phase by interviewing operational staff at two buildings. Further information was gained from participation in conferences, seminars, internal meetings and literary studies.

2. PART 1 – Conditions That Promote Or Inhibit The Transfer Of Experience

2.1 Inhibiting Factors

2.1.1 Communication - Operation/Design Interface

Much of the communication involves personal networks. Openness and good communication in the sections are perceived as positive. There is broad agreement that co-operation will give better project results, but also that communication between operational staff and designers is not nearly good enough. Everyone is aware of the importance and utility of having the right parties involved at the right time. Because of this certainty, employees have taken the initiative to get themselves and each other involved in order to have an influence.

2.1.2 Different Practices / Administrative Procedures

Project managers and the regional offices have different views as to whether or not operating personnel should be involved in a project. Practices vary and routines for what is mandatory are not well known (Aase and Pedersen 1999). A failure to comply with routines does not give rise to any sanctions. A high degree of individualism results in different administrative procedures, and also gives rise to conflict and reduces the teamwork in the organisation (Eikland 2001).

2.1.3 Decision-making Processes and Conflict Management

Almost half of those questioned feel that the decision-making process at the company is not orderly. The employees do not know when and where the decision is supposed to be made. Often, there are no clear constraints at the start of a project. The professional staff may become increasingly bureaucratic and reluctant to make decisions (Eikland 2001). This seems to be a part of the corporate culture. The organisation does not have clear guidelines for how a conflict should be resolved.

2.1.4 Organisational Structure, Worker Turnover and Insufficient Sense of Ownership

The organisational structure is perceived as a source of conflict (Eikland 2001). There is a need to clarify roles, and people need to have correct expectations of each other's job tasks. Almost half of the respondents say that there is double work in the organisation. This is not unexpected in a big organisation (Aase 1997). Many blame external factors such as the political winds, change of users, etc. These often change the constraints so that new evaluations must be made in the project.

In projects at the head office frequent replacements of project managers and others in the project team makes it difficult to maintain continuity and a comprehensive overview.

About 2/5 of the respondents say that they do not have a sense of ownership of their work. This makes it difficult to manage and pass on experiences and is the greatest barrier to a transfer of experience (Aase & Pedersen 1999).

2.1.5 Lack of Priority and Resources

Almost 3/5 of the respondents think that the organisation does not have enough resources and there is no room for the transfer of experience in their daily activities. But almost 1/3 thinks that the organisation has more than enough resources, but does not use them correctly.

Many feel that the experience and knowledge they acquire are very difficult to convey to others or to adapt into other forms. Most people conclude they have control over their job tasks and have the possibility of influencing their working day, even though a lot of tasks must be performed ad hoc. It is vital to have this integrated in the daily tasks (Aase & Pedersen 1999).

2.1.6 Insufficient Methods and Systems and Facilitating Access to Relevant Information

Systems of experience transfer are planned but not yet in place. Former project instructions that many regard as valuable have been formally abandoned, but are still in use by many project managers, as the process descriptions are still relevant. The current versions of procedures are regarded as important policy instruments, but vary greatly in their quality and practice. Only a few people use these routines, as they have not yet become established among the employees. There is

no form of sanctions if these routines are not followed.

The employees who have been here the longest are the most frustrated about lack of proper routines and requirements for documentation for which they see no use. Newer employees are confused about the amount of documentation, which comes in many different versions, as the same thing is written in different ways in different places. There is much information available, but relevant information is difficult to find. Lack of time makes it hard to absorb the relevant information (Aase & Pedersen 1999).

2.2 Promoting Factors

2.2.1 Awareness and Attitude

The awareness of the transfer of experience is high. 85% of those asked regards experience as value added and an investment. A small number of those asked think that the transfer of experience is not important, as they regard most important types of knowledge as non-transferable. The employees want to deal with negative events and experiences. The problem is neither one of a negative attitude nor lack of willingness, but of the ability to deal with them. Because of a “face saving” factor, the organisation often does not want to deal with the cause of the problem (Argyris 1994). The question is whether the company will tolerate feedback when the organisation does not want to make mistakes.

Many of the respondents say that there are few conflicts, and those who have conflicts think that the main reason for them can be found in the organisational structure and the conflict management. Very few conflicts are caused by persons, professions or job tasks.

2.2.2 Organisational Mobility, Experimentation and Heterogeneity

Changing and being flexible may be perceived positively if it leads to improvements. Not all parts of the organisation are willing to change, but the management is showing a positive attitude and a willingness to exert as much control and influence as possible on the process of change that has been imposed on them by the ministries. Most of the respondents think the company is complex and has many different types of people in its organisation, everything from newly educated staff to those retired. In addition, the company has employees from many different countries, and the percentage of women is good, i.e. the potential of ideas and different views shall be good (Feldmand 1986, Nonaka 1988 Easterny-Smith).

2.2.3 Bureaucratisation of Policy Instruments – Computer Software and Systems

A clear majority of respondents do not have any faith that a formal system with regard to a database, computer software or formal routines will solve the problem of transferring experience. There is a need for human contact, informal channels, and meetings (Aase 1997). Over half of the respondents feel that they get enough relevant information relative to their job tasks, although sometimes it is difficult to find.

3. PART II – typical technical and procedural experiences

3.1 Is It Possible To Find Representative Experiences In The Buildings?

3.1.1 During Design

The survey shows that a building can be well planned with a focus on flexibility that simplifies later rebuilding (Arge and Landstad 2002), but choices of materials and solutions complicate operation and maintenance. Often, the essence of a good solution is not to choose the theoretically best and most advanced solution unless implementation and operation have been considered. Many serious problems could easily be solved in the early phases, but become costly later on (Eikeland 2001).

Several of the technical experiences indicate that unfavourable solutions might have been avoided if there had been better co-operation and communication with work managers and users during the planning and construction process (Eikland 2001). Gjestland (2000) wrote that the clearer the external conditions, the better the product. The difficulty often involves defining who should set the terms when there are many strong actors who want to influence the process without authorisation or

responsibility (Eikeland 2001). A very unfavourable situation occurs when the project owner has little willingness and competence to make decisions and set clear limits for advisers.

3.1.2 During The Construction Phase

It is not just a lack of time and knowledge that causes shoddy handiwork; lack of communication and co-operation among those involved also play important roles. Especially when dealing with a large number of contractors and suppliers, it is difficult to maintain a clear picture of who is responsible for what, both for the project owner and later for the work managers (Eikeland 2001).

The survey shows that the main reason why contractors and advisers did not follow routines for construction projects is that the construction management did not follow up deviance from those routines.

3.1.3 In The Time Allowed For Claims

Most of the interviewees say that there is too much unfinished work at the time of final inspection. During that time, it is often difficult to contact those who participated in the project, because they are already involved in other projects (Lê 2002).

3.1.4 In The Operational Phase

Experiences related by operational staff differ with the type of building for which they are responsible. Operational staff are generally good at facilitating the operation of the buildings and the technical installations inside, but few are actively seeking out development and updating (Lê 2002). There is a generation gap when it comes to using computers as tools, partly because of the small rate of turnover. As in the earlier phases, some of them are not loyal to the formal routines and procedures, mainly because they don't see the need for them and are not familiar with them.

3.2 A Short Evaluation Of The Results

Due to limited time and resources, the inquiry was small and had a limited scope. It did not give a good statistical overview of the amount of damage per building or the type of damage over time. The survey is therefore not very representative for the number of buildings by this time. A representative survey would require a larger sample, but the survey shows that damage from water, frost, mould and rot, damage in washing areas and/or from dampness, damage from settling, damage to roofs, damage to concrete and structural damage are quite common and are found in one form or another in many cases in the survey.

4. Is It Possible To Transfer Experience Back To The Different Phases?

Over 2/3 of all experiences originate from decisions made in the early phases. Interviewees state, among other things, that checklists and standards for different types of projects need to be developed. There are cases where checklists, procedures and routines exist, but errors and defects still repeat themselves. This may be due to a lack of follow-up and sanction (Lê 2002). The survey shows that there is a need to structure and systematise experiences. There may be two strategies:

- increased focus on ownership – make people more aware of the importance of transfers of experience in creating value
- adequate organisational involvement – the transfer of experience is not exclusive to a project or the operational part of the organisation, it also demands involvement by the top management as it has to be managed and guided using the correct means.

4.1 Initiatives

Initiatives to promote the transfer of experience or sharing of knowledge have to be adapted to the task, situation and organisation as part 1 shows (Lê 2002). That is, transfer of experience must be a function of organisation and initiatives. Introduction of correct initiatives is critical to ensure focus during and after an experience transfer process. It must be a management task that is carried out over a period of time, not a mechanical process.

Examples of such initiatives are balanced objective management, introduction of arrangements with incentives, active participation, co-ordination of various experience transfer initiatives and

dedicated ownership of the profitable areas in the organisation.

An awareness of the teamwork between the different types of knowledge is important. Teamwork means speaking the same language and having common practices and habits. Transfer of experience addresses the sharing of many types of knowledge such as manuals, concepts, norms, methods, equipment, metaphors, myths and stories. Knowledge must be used to create value (Grønhaug and Hansen 2001) and must be tied to both short and long term earnings and the development of the enterprise. There are two strategies (Kvillfors 2003):

- Knowledge management strategies that pertain to documentation and/or codification¹: These strategies deal with the technology, e.g. storing information and making it available to all co-workers. In principle, it should be possible to activate all information and knowledge,
- Personification strategies focus on people, e.g. the sharing of experience among individual users on multidisciplinary teams. At least one person or unit must be responsible for the transfer of experience. Among other things, training consists of peer assistance.

The type and medium of experience must be adapted to what is being conveyed, and support from technology and the processes in organisations should be adapted to each other. This may be through databases containing CVs, peer assistance, the use of stories, databases listing each person's area of competence, process-support, deliberate allocation of colleagues, publishing of resources on the web and checklists.

4.2 Learning loops

The experience transfer is just a tool to use the resources more effectively. On this basis, one can pose the following hypothesis: Without communication channels and structured models, it will be difficult to close the two parallel courses of experience transfer into learning-loops. In this context, closing the experience transfer loop means transferring experience that has been gained in alike activity. There is a need for this transfer in all phases throughout the entire lifetime of the construction project, e.g. from the operating phase back to the project phase – the big experience transfer loop. At the same time, much experience is gained during design and execution in the construction process, which is equally important to pass on to other phases – the small experience transfer loops. In order for the transfer of experience to be optimal, both of these loops must be functioning.

By closing the experience transfer loop, it is possible to get more satisfactory results in the form of increased quality in decision-making processes, fewer errors, foreseen challenges, a strategic future-oriented way of working, and last but not least, satisfied employees.

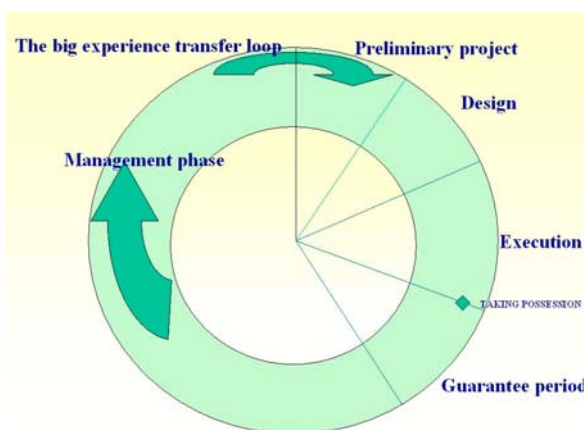


Figure 1 The big experience transfer – a selection of the main phases.

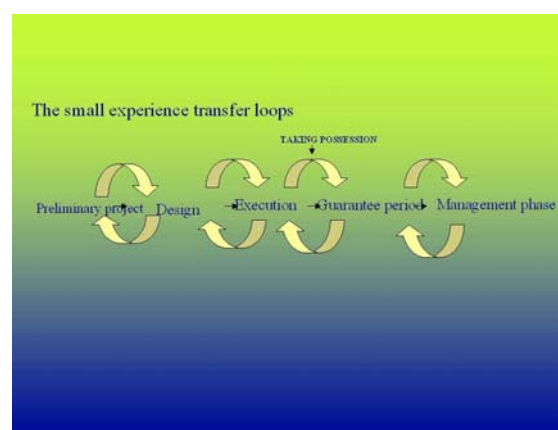


Figure 2 The small experience transfer loops – a selection of the main phases.

¹ Anderson Consulting, currently Accenture, Ernst & Young, currently Cap Gemini Ernst & Young)

5. Conclusion

The study shows that there are strengths and weaknesses regarding to transfer of experience and knowledge management. Statsbygg has a clear understanding of the importance and utility of these processes, but needs stronger organisational. At the same time, it is necessary to have a technical tool in the form of a data warehouse. Simultaneously, there should be an opportunity to pass on experience in the form of routines and performance criteria at the company. Regardless of which form is to be organised, proper maintenance of the system, utility, and a low user threshold are necessary conditions.

Knowledge remains passive until it is put to use, and it exists in many different forms. Both explicit knowledge and tacit knowledge are important. The knowledge management process follows two parallel courses i.e. the transfer of knowledge and the organisational learning (Grønhaug & Hansen 2001).

The survey shows that it will be valuable to reduce the number of recurrent mistakes and deficiencies, for 2/3 of the challenges in the operational phase have their roots in the design- or construction phase. The survey indicates that large projects have a substantial degree of complexity, which the organisation is not capable of handling. A lack of clear control and management mechanisms prevent total and stringent follow-up of the desired profits and targets (Kvillfors 2003).

5.1 Future Research

The long-standing research of knowledge management concludes that the most valuable knowledge is in flux, and it is never located only in people's heads or in databases. In order to have any value, knowledge must be applied (Aase 1997). There must be a balance between centralised management and the development of the faculty of judgment and distributed management. Furthermore, there must be a balance between simple routines and the ability to support complex knowledge processes, and there must be a balance between planned strategic processes and the ability to nurture creative impulses. Devising a database structure for an empirical database will be one of many challenges.

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