The staffing process for product development projects

A case study at 3P, Volvo AB

Sladjana Strbac

DISSERTATION

International Project Management
CHALMERS UNIVERSITY OF TECHNOLOGY
NORTHUMBRIA UNIVERSITY
Göteborg, Sweden 2006

Dissertation for the joint degree

MSc in International Project Management
Teknologie magisterexamen i International Project Management

The staffing process for product development projects
A case study at 3P, Volvo AB

Sladjana Strbac

International Project Management
CHALMERS UNIVERSITY OF TECHNOLOGY
NORTHUMBRIA UNIVERSITY
Göteborg, Sweden 2006

ACKNOWLEDGEMENTS

When I started work on this dissertation I was very enthusiastic. However, as the process extended in time, more will power and strength was needed to complete the journey. Several times I felt that it was an uphill battle to complete this assignment. But as I look back on the past months, I find that it was on this journey that I received the necessary insight in order to reach the end of the path and complete this work.

On this path I have found strength and seen myself develop. These are all good things but without the tutoring and support from my supervisor Dr Max Rapp Ricciardi, PhD. I can honestly say I would not have come this far without his help and support as well as good advice and encouragement. I have to say, “Thank you very much Max for being there for me”.

I would also like to thank my tutor Marje Seimre at 3P and Bengt Münter, as well as all the respondents that have made it possible to conduct this case study at 3P, Volvo AB.
Finally, I would like to thank my friends and family for all their love and support during this time. I hope that others are going to enjoy reading my work and hopefully find it interesting.

Sladjana Strbac, Göteborg, Sweden, 2006

Table of contents

The staffing process for product development projects
A case study at 3P, Volvo AB

Sladjana Strbac

Abstract. This dissertation is part of the Master of Science in International Project Management, jointly awarded by Chalmers Lindholmen (Göteborg, Sweden) and the University of Northumbria (Newcastle, UK). The study presented in the dissertation is based on theories and empirical data. The purpose of the study is; to investigate and understand one organisation's staffing process for product development projects. The aim was to shed light on how this process works and any impact it had on the project itself. This study was carried out during spring 2006 at 3P, a part of Volvo AB. The results of the empirical study showed that the staffing process for 3P projects was non-existent. The staffing process for projects was entirely handled by the line managers from each department. This case study shows that the staffing process is affected by the way one organisation has structured their working process. The absence of involvement from project managers in the staffing process affects the ability to express the factors that affect project outcome. According to this study, the factors that impacted the most on 3P projects were; quality, time and conflict. Other findings indicated that team composition was not something that was done at 3P. The project selected at 3P shows that one personality role dominated the project team. In this study, the issue of competence was also investigated. A more positive outcome was attained, based on the human resource department's involvement in charting competence in the organisation. Results from this study show that there is a need to improve dynamics and composition of project teams. To improve the staffing process and team composition, 3P should use in-house knowledge from the human resource department. At present such collaboration does not exist.

Key words: Product development projects, staffing process, human resource management, project management, competence, team composition.

Introduction

At the beginning of the 20th century the level of unskilled labour accounted for about 90% of the workforce. Today, this figure is closer to 20% (Spira, 2005). Davenport (1999) explains that companies viewed workers only as costs, and they tried to cut all the expenses tied to people just like they tried to cut costs in other areas. Twenty years ago when companies were recruiting people the required skills were relatively easy to find. Furthermore, personnel were expected to remain with the company until they reached retirement age (Spira, 2005). Those days seem to be long gone as dramatic changes on the market affect human resource managers and their workplace (Messmer, 1990). The world is changing into a knowledge-based economy where the company workforce is the linchpin of an organisation's success (Spira, 2005; Antoni, 2003; Saint-Onge 2001; Frame 1999). In the competitive environment of today, it becomes crucial for companies to master, encourage and maintain the organisation's learning curve during new product development projects (Bourgeon, 2005; Frame, 1999). These unique competence resources owned by the corporation are at their core to ensure survival (Ruuska and Vartiainen, 2003; Schafer, 2004). To maintain today's core competence a company needs to have a strategy (Porter, 1980; Messmer, 1990; Saint-Onge,

2001) on how to recruit and maintain knowledge within a company. This is the reason why it has become the modern company's most important instrument (Antoni, 2003; Bruzelius, 2000; Davenport et al, 1998; Frame 1999). In the new business context, organisations are required to have rapid and cost-effective product development to become competitive (Bourgeon, 2005; Rapp Ricciardi, 2001; Marttala et al, 1999). This is of great importance with new high-technological product development projects where cross-functional multi-skilled teams are used (Österlund, 1999; Ruuska et al, 2003). In order to combine these skills organisations need modern information systems to better utilise corporate human resources (Österlund, 1999).

Background

Most organisations plan their business activities thoroughly. They start from the top with strategic planning and work down to the implementation stage. Every plan has an impact on staffing requirements. Nevertheless, few companies take the next logical planning step, to secure specific staffing plans which in the end affect all the other plans in the organisation. Simmons (2004) draws on parallels with supply chain management, the way companies have achieved matching the production and process work with supply and customer demand. He states that there is nothing different with the human supply process.

"People are also a resource" (Simmons, 2004, p. 12)

The supply of human resources needs to match the demand to avoid any surplus in the process and achieve cost-efficiency. To accomplish this, planning cost-efficiency is crucial for both short-term (operational) and long-term (strategic and transitional) activities within an organisation (Simmons, 2004).

Aim

There are many books and articles that state that it is important to staff projects with the right people that have the right competence, but very few explain the process they use to accomplish this. This case study examines the staffing process of an ongoing 3P project at Volvo AB. The aim of this thesis is:

- To investigate and understand the staffing process for product development projects with the present competence view and team composition.
- To shed light on the present staffing process and how co-workers perceive this process in regard to time, quality and cost in project work.

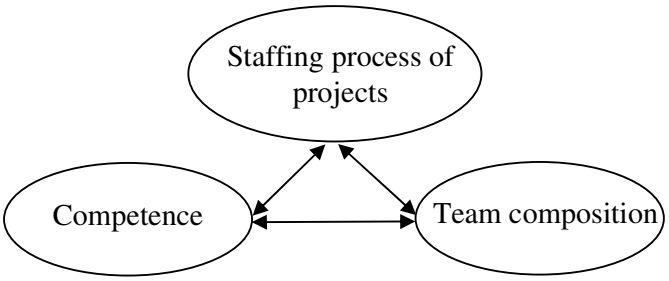


Figure 1. *A diagram showing the relationship between the subject matter in this thesis*

The following questions are going to be evaluated and discussed in this thesis.

1. What process is used to staff projects?
2. How do competence requirements reflect the staffing process?
3. At present, what does the team composition for project X look like?
4. How do co-workers perceive the consequences of the present staffing process?
5. Is the human resource department involved in the issues as stated in figure 1?

Thesis disposition and reader's guide

The dissertation consists of six chapters. The disposition is arranged according to figure 2.

The first two chapters present the framework of this study. Chapter one is based on books and articles in this area of research. The author's aim and queries are stated here. Chapter two focuses on the staffing process for a product development project using a theoretical framework. Chapter three deals with the scientific approach and methods where the author clarifies who the participants are, the design, research instruments, as well as, thesis procedure.

Chapter four provides data and investigating material from the interviews and questionnaires. The author analyses and discusses the data collected in chapter five. Chapter six ends the thesis with conclusions and reflections from the author. Appendices and a reference list are included at the end of this thesis.

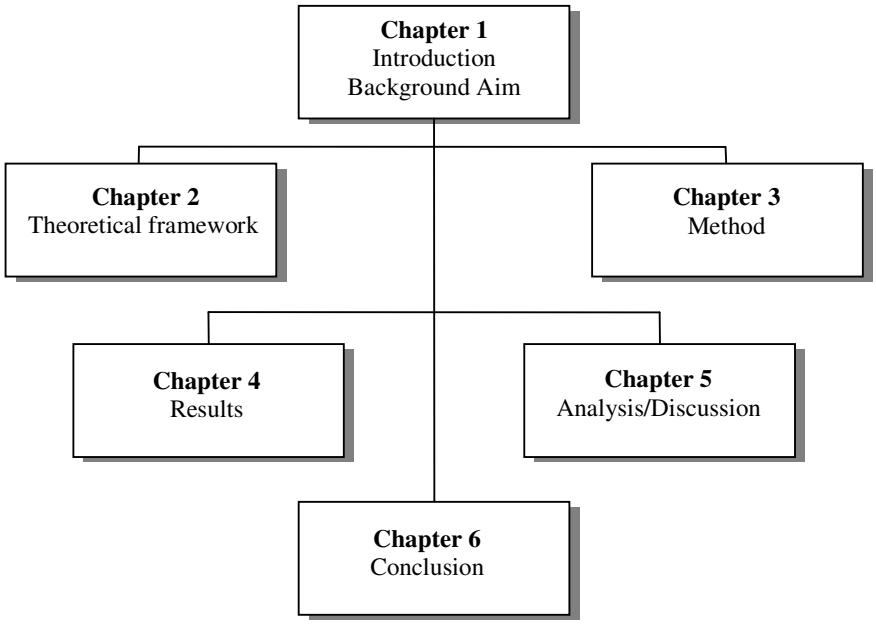


Figure 2. *A diagram showing chapter layout*

THEORETICAL FRAMEWORK

The purpose of this chapter is to provide a deeper understanding of the theoretical process of staffing projects, using knowledge generated by researchers in the field. The theoretical field covers the staffing process of product development projects, typical characteristics of project members and competence needed in projects.

Project management development during the 20th century

Project work is not a new phenomenon it has existed a long time. Anyone who doubts this can merely look into and read some past projects, such as; the Trojan War, Columbus' travels to the Far East, the building of tower of Babel, the Egyptian pyramids, Machu Picchu in the Andes, Hangzhou canal in China and the Coliseum in Rome (Frame, 1999; Rapp Ricciardi, 2001; Macheridis, 2005). Rapp Ricciardi (2001), states that working in a project can be viewed as a return to the natural way of working for us humans.

At the beginning of the 20th century the interest in projects increased with the focus on time and resource planning techniques. This interest in projects began in the defence industry during the cold war (Rapp Ricciardi, 2001). One person who contributed to the project development was Henry Gantt. He developed a planning diagram (Gantt schedule) with the aim of coordinating different activities that occurred in the company (Macheridis, 2005). In 1956, the Program Evaluation and Review Technique (PERT) were developed in the USA defence department. Shortly thereafter this technique was implemented in other industries. The chemical industry had developed the Du-Pont technique, at roughly the same time, which was called the Critical Path Method (CPM). Both the PERT and CPM were developed as a network technique focusing on the critical line (Macheridis, 2005).

During 1960, the development of planning and follow-up techniques was high, because of increased complexity in projects. At the same time interest increased in the organisational theory of project management (Macheridis, 2005). It was during this time that the American Project Management Institute (PMI) was founded 1969 (Rapp Ricciardi, 2001). This was an attempt to organise and publicise a standard for how projects should be defined and managed, in conjunction with other similar organisations, such as, the International Project Management Association (IPMA) and the Association for Project Management (APM). According to Rapp Ricciardi (2001), PMI defines a project as follows;

> "*Projects are goal oriented. They involve coordinated undertaking of interrelated activities. They are of finite duration, with beginnings and ends. They are each, to a degree, unique. In general these four characteristics distinguish projects from other undertakings*".
>
> *(Rapp Ricciardi, 2001, p.14)*

International competition increased extensively during the 1970's, which contributed to companies developing increased flexibility. This made time planning techniques more user-friendly. Human resource management along with the organisational theories became important. This development improved the approach used by human resources and project knowledge in a more systematic and theoretical way (Macheridis, 2005). During the 1980's, international competition continued which increased the development within projects. The first area of interest was the project process which involved management and relationship issues, contributing to social development and management development of projects. This

development increased knowledge of different projects in different areas, evolving from the manufacturing industry to other industries (Macheridis, 2005).

Information technology development increased during the 1990's, which contributed to the focus on time management. Time becomes the most important factor when planning and managing. Thus, computer program development becomes essential. The advantages of this, focuses integrated planning with other factors, such as, budget, resource utilisation, follow-ups and financial operation control (Macheridis, 2005). At the beginning of the 21st century, the focus was on quality and competence development regarding management and coordination of projects. Another focus is on how to integrate flows in, eg, logistics or a network in order to increase customer value. These interests enhance the ethics in a project context (Macheridis, 2005).

Project management today

Today, the basic working method used in any organisation is project construction. This is caused by increasing intensive global competition, which sets demands on organisations. Companies use the projects as a tool to meet the competitive demand of today (Marttala et al, 1999; Macheridis, 2005; Rapp Ricciardi, 1999; Ruuska et al, 2003). Project teams are often cross-functional, a project manager can reduce the development time by increasing team motivation, flexibility and effectiveness (Rapp Ricciardi, 2001; Ruuska et al, 2003; Boddy, 2002). This interest in projects comes from the increasing demand of new innovative products in our society (Macheridis, 2005). All this is done to satisfy the customers on today's market and reap economical benefits (Rapp Ricciardi, 2001; Macheridis, 2005).

Each project is unique and a step into the unknown; the attempt to combine ideas, activities, the beginning of something new, building blocks and strategic changes (Boddy, 2002). The effect of an increasing interest in projects sets other domino effects into motion within the organisation, such as, investment and staff policies. These set higher demands on organising assets in a proper way (Macheridis, 2005). In a product development context, the central problem is the balance between human creativity and control of the development process. If there is a lack of control, the outcome is a less successful product as well as a less successful project (Rapp Ricciardi, 2001).

Today, products are perishable goods where time is the foremost important competitive aspect. All projects have a relationship between the three main factors; time, cost and quality (Boddy, 2002; Macheridis, 2005; Rapp Ricciardi, 2001). If one factor is met it will be at the expense of the two remaining ones, see figure 3. That is why it is important to manage the internal and external factors avoiding influencing project time, quality and cost. Achieving this balance between the three factors is the main mission that the project manager has (Boddy, 2002; Rapp Ricciardi, 2001).

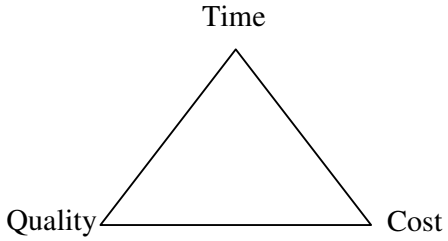


Figure 3. A diagram showing the conflicting project criteria (Boddy, 2002; 6)

Few organisations make the effort to perceive project goals and re-evaluate the first project plan for cost, time and quality once the project has begun (Rapp Ricciardi, 2001). The outcome changes in the project over time. Different resources and objectives affect the project plan. In order to handle this, there is a need to replan, control and continuously re-evaluate the process (Rapp Ricciardi, 2001). Many organisations do not see or do not have the time to conduct assessments and it is much easier to focus on the completion of a project. Some teams work to very high standards and achieve more than expected and as a consequence tend to be more successful. Other teams may work without enthusiasm or commitment and tend to fail in achieving anything valuable. By putting people in a team does not in itself ensure that they will meet the business goals set.

According to Rapp Ricciardi (2001) there are three main strategic factors that affect the outcome of a successful project;

1. Define project assignments and goals at project start.
2. Define company management involvement.
3. Ensure a complete project plan is available at project start.

One conclusion that Rapp Ricciardi (2001) mentions is a factor involved in successful and less successful projects, as seen from a psychological viewpoint. This is the “human factor”.

Archibald (1992, p.17) expresses symptoms and probable causes of poor performance on projects that the organisation should have been more aware of. The symptoms are as follows:

- Late completions
- Penalties
- Cost overruns
- High project staff turnover
- Duplications of effort and inefficient use of functional specialists
- Excessive involvement of top management in the project's execution.

According to Archibald (1992, p.18), probable causes of these symptoms are;

1. The underlying processes (eg, product development and launch processes) are not understood or documented as integrated entities.
2. Too many projects are under way at one time with limited available resources; the organisation is overloaded.
3. Original schedule or cost commitments are impossible.
4. No one is responsible for overall projects.
5. The project management job is poorly understood.
6. Project management reports to the wrong part of the organisation.
7. The wrong type of person is assigned as a project manger.
8. Excessive conflict exists between project and functional mangers.
9. No integrated planning and control exist.
10. Project priorities rapidly change and conflict.
11. There is poor control over customer changes.
12. There is poor control of design changes and no configuration management.
13. Project offices are improperly organised and staffed.

The staffing process for product development projects

In the development of new high technology products, Österlund (1999) states that the contribution of many highly specialised competences are necessary. Selecting a project team requires more than just technical skills. Melymuka (2004) and Badawy (2004) state that there is a need for a variety of skills and experiences; You need to get the right mix of soft skills, personalities and attitudes to gel and achieve results, but also a mix of dimensions of staff experience.

> *"No two engineers are created equal, and based on their background verses their creativity, you've got to come up with a balanced team."*
>
> *(Jones, 2000, p.38)*

Newman (2000) states that all too often project staffing becomes a hit or miss situation. The selection of people for a project can be as simple as looking for the people that are available, or trying to work within organisational politics, to the best possible scenario where each individual selected is the best at what they do.

> *"Good project managers understand the importance of the knowledge that people bring to a project. They also understand the importance of selecting people who can work together."*
>
> *(Newman, 2000, p. 3)*

Human resources represent the most important ingredient in a successful project (Engle, 2005). Project staffing decisions are critical, since they constitute approximately 70% to 80% of the project cost (Jones, 2000). According to Engle (2005) most projects fail because the management underestimates the amount of resources required. They also tend to fail in organising the teams properly, or neglect to staff the project adequately (Engle, 2005). Staff planning is hard to integrate but it is essential. If it is done properly, it could provide the company with benefits, such as, reduction in recruitment costs by as much as 30% (Simmons, 2004). Avoiding hiring staff at the last moment and having to deal with rapid layoffs is one of many benefits. Adding staffing requirements into the project budget does not have to be difficult to identify, (Jones, 2000). Spira (2005) recommends that the corporate managers should investigate how to manage human resources, in terms of a pool of intellectual capital.

Different project organisation

Projects can be organised differently based on the type of project. As mentioned previously, projects are temporary organisations. Organising project work can be viewed differently based on the chosen approach. This means extracting people for tiger teams or conducting the projects in a line function. Each project is specifically developed to accomplish one goal and thereafter dissolved. The shape of project organisations is important for collaboration within the project team. There are three classical project organisations, see figure 4, (Rapp Ricciardi, 2001; Archibald, 1992; Macheridis, 2005; Marttala and Karlsson, 1999):

1. The functional project organisation.
2. The autonomous project organisation.
3. The matrix project organisation (there are weak and strong matrices).

Starting with the functional organisation; number 1 in figure 4, where the responsibility in a project is evenly shared between different line managers. Project responsibility is transferred from one line manager to another during the project. The line managers supply the project with the proper resources during the course of the project (Rapp Ricciardi, 2001; Archibald, 1992; Marttala et al, 1999).

An advantage of the functional organisation is that the project team can remain and develop their special competence in their present department. This means that the project teams are more effective and can be used in several parallel ongoing projects. On a psychological level one must consider that the project members feel an effect of continuity while deeply rooted in their department and company organisation (Rapp Ricciardi, 2001; Archibald, 1992; Marttala et al, 1999).

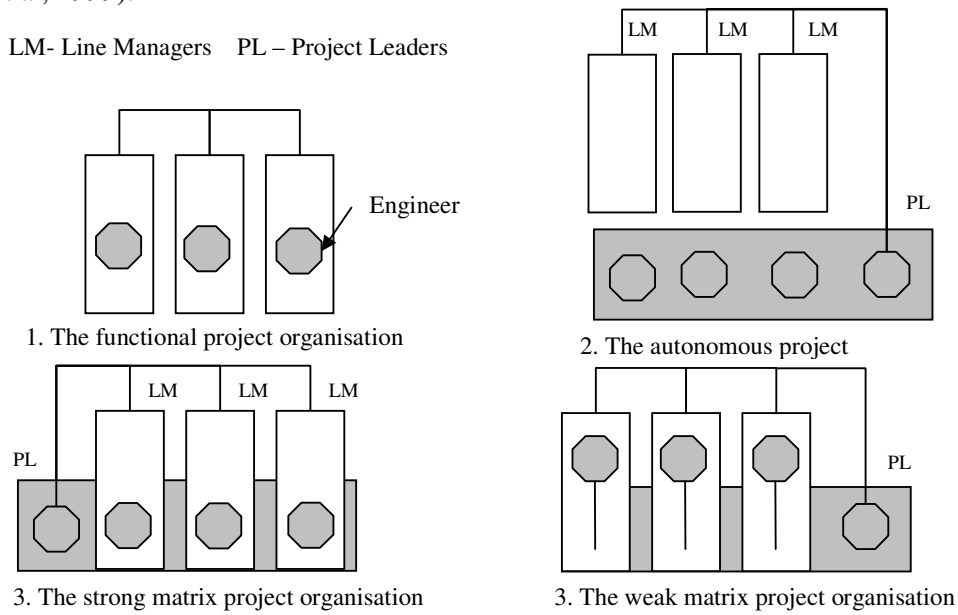


Figure 4. Models showing different ways of organising product development projects (Rapp Ricciardi, 2001, p. 18)

The disadvantage of the functional organisation way of running projects is communication which degenerates, which in turn, leads to a lack of community. Another is not being able to perceive the general picture and acknowledge that individuals are working in a project. If there is a lack of informal communication between the departments involved, competence utilisation may show inadequate knowledge. One of the major disadvantages with functional organisation is leadership responsibility, followed by the coordination of the overall project. This way of organising projects is unreasonable when the complexity and quantity of a project increases (Rapp Ricciardi, 2001; Archibald, 1992; Marttala et al, 1999).

The autonomous project organisation; number 2 in figure 4, is the opposite of a functional project organisation. Autonomous projects are often referred to as tiger teams. This organisation is separate from the parent organisation with is own technical expertise and administration. Project members involved in these kinds of projects leave their regular jobs and commit to the project until the project has reached its goal. In this community the team has an overall responsibility to technical development and the finished product. Project managers of these teams are often “heavyweight project managers”. This means that it is an

experienced person who is well respected in the organisation (Rapp Ricciardi, 2001; Marttala et al, 1999; Archibald, 1992).

One of the advantages of an autonomous project organisation is that the management is integrated. The benefit that comes from having this organisation is that you answer to one manager instead of having to get approval from several line managers. Communication is improved by working this way in the project team. Consequently, this drives the project forward and it becomes easier to understand, implement and get an overall view. The research shows that this type of organisation is the best for product development projects. This is based on the collaboration and integration processes between project members which is higher than in other ways of working. In these organisations the project life cycle and the product development time is considerably shorter than in other cases. High workload is a result of this. Previous studies show that project members experience a physical closeness, better communication and more flexibility in separate project organisations (Rapp Ricciardi, 2001; Marttala et al, 1999; Archibald, 1992).

In the functional organisation the members deepen their special competence. However, compare this with the autonomous project organisation where there are difficulties when acquiring resources. There may be a risk when using the autonomous organisation that technical development may deteriorate because there is no contact with the mother organisation. Group thinking is another factor that may affect the organisation where the bonds and feelings towards the project team are strengthened and the outside world becomes a threat (Rapp Ricciardi, 2001; Marttala et al, 1999).

The third type of project organisation is the matrix form that is divided into two sub-groups; “heavyweight matrix projects”, number 3 in figure 4, and “lightweight matrix projects”, number 4 in figure 3, (Rapp Ricciardi, 2001). The general matrix form is developed using a combination of project organisation and functional organisation. The combination of these may be structured differently, based on the company and its organisational abilities. The matrix structure of organising product development projects is the most used pattern in organisations today, because it is cross-functional and there are no special project members that need to be involved. Previous studies show that matrix organisations are good for product development cases because they create a sound collaboration and coordination among the project members (Rapp Ricciardi, 2001; Marttala et al, 1999).

If the matrix is inclined towards a separate project organisation, the project managers are given a lot of authority which lends itself to the heavyweight matrix project organisation. The project manager of this organisation has authority and freedom of action regarding the project's time plan as well as project resources, from project start to finish (Rapp Ricciardi, 2001). If the matrix is inclined towards the functional project organisation where line managers have a greater influence on project time and resources, it is considered a weak project matrix organisation. The lightweight matrix projects often only have one full-time project manager but all other resources come from the functional organisation (Rapp Ricciardi, 2001).

The advantages of using the lightweight matrix project is that the project manager can continually follow up the responsible people involved and drive forward the different factors to the end so that the project can reach its goal. A major benefit of working this way is utilisation of resources because the project members can be used in several projects at the same time (Rapp Ricciardi, 2001; Archibald, 1992). The greatest disadvantage in lightweight

matrix projects is the line managers' impact on all project resources which can make the project mangers powerless in cases of conflict. Another factor is that project members may often become confused as to where their loyalty lies, as concerns responsibility. This could lead to the line manager on one side and the project manager on the other; it is not easy to have two managers, especially if there is a conflict between them. It is easy to draw the line in theory but when it comes down to practice, it is hard to accomplish (Rapp Ricciardi, 2001).

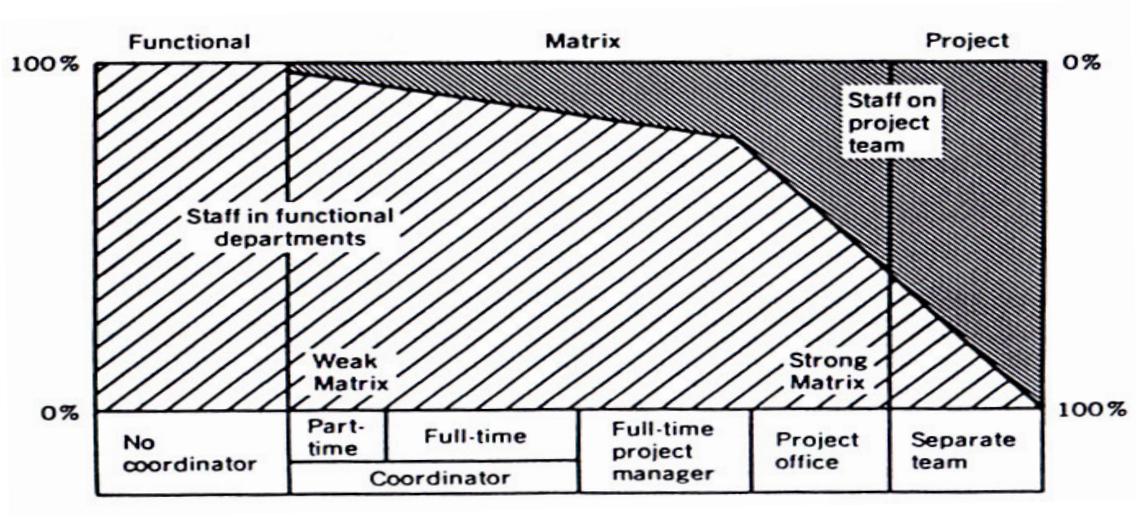


Figure 5. A graph showing the organisational continuum (Archibald, 1992, p. 46).

In figure 5 above, a comprehensive picture of the differences of working in a functional way within projects versus full-time separate project requirements (Archibald, 1992). In this picture there is a matrix organisation between the weak matrix and the strong matrix regarding coordination or full-time involvement of the staff. The terms strong or weak should not be used in a sense of good or bad but rather to refer to the size and power of integrated functions in the matrix (Archibald, 1992).

The different phases of the projects teams

All project teams go through different phases, see figure 6 below. To create a team with members that will be able to perform, they need to be able to learn how to work together at the project start. Before a team performs well they need to go through different stages of growth. Teams grow by trusting members this is an area, which is non-existent when a team first comes together. As they work they get the chance to learn about one another and build ways to collaborate on the work (Boddy, 2002). Figure 6 explains the phases and the impact on group effectiveness with regards to time. According to Rapp Ricciardi (2001), project resources should be stated at the beginning of a project, however that is not always the case.

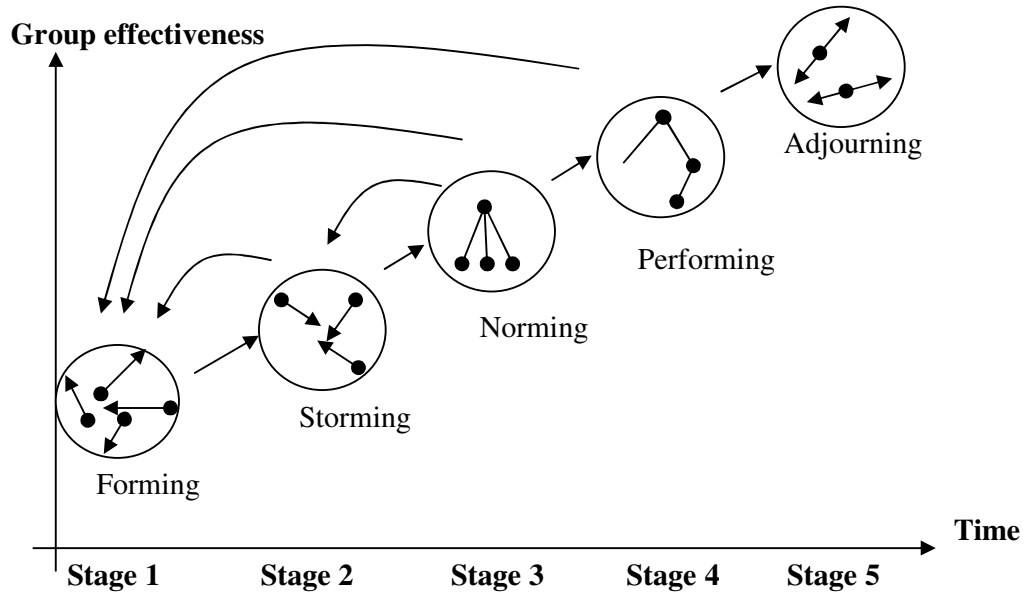


Figure 6. The project team's development phases, (Boddy, 2002, p. 138).

1. Forming — During this stage the members join a project team. Often the project/line manager selects them for their functional and technical experience or for some other skills that they contribute to the project. This stage is called the impression stage. This stage also includes identifying the role one has in the team. The project manager may provide input to form the team members' expectations and relay previous experience as well as bringing ideas to this project.

2. Storming — This stage begins when the project group gets down to the actual work and the members begin to express difference. Some members may withhold their interest or their interest is not recognised at the forming stage. Different views on the way of working within the project may be expressed. Some members may prefer more direction at this stage, while others expect a more participative approach. Many teams never pass this stage successfully, especially if they accommodate or repress differences rather than to acknowledge and discuss them openly. A project manger has a critical role at this stage when facing the difficulties and driving the team forward to enter the next stage. If the project has a large turnover of members, many project teams may not be able to pass this stage.

3. Norming — When they enter this stage the team members constantly talk about their differences and establish adequate ways of working together. They develop a set of shared norms - expected modes of behaviour - how they interact with each other. Here they create or accept roles so responsibility becomes clear. In some cases the team members develop a common language to guide the group and allow the group to work effectively.

4. Performing — During this stage the group works well, gets on with the job to the required standard and achieves its objectives. Not all groups get this far, especially if they failed to pass the storming phase.

5. Adjourning The group completes the project and disbands. They may reflect on the project performance and identify lessons for future tasks. Some projects disband because they are not able to do the job and agree to stop the project. In a project the tasks change, new members join, new circumstances and new tensions arise which returns the group to a previous stage. In long-term projects that take several years, the turnover of members reforms the current group and they often return to the storming stage. To avoid this, project groups need to briefly revisit the forming and norming stages. But that is not a guarantee that the group may not be involved in a task or a change which could change the group's current shape and send it back to the storming stage.

Project work is inspiring and educational for all involved in the development process of product or a service (Boddy, 2002). It is important to remember that project organisation is temporary which means that as long as the project is processed, the organisation is solid and has its own distribution of work, decision processes, rules and regulations, coordination, communication, documentation and steering (Rapp Ricciardi, 2001; Macheridis, 2005; Boddy, 2002).

Human resource management staffing process

Intangible assets should be managed by the human resource function or department but according to Saint-Onge (2001) there has been a decrease in this function. The problem seems to be that human resource departments appear to move slowly and are not up-to-date with the realities of the market status (Saint-Onge, 2001; Hafeez et al, 2003). The traditional structure of human resources from the industrial era is obsolete and will not work in future business challenges. It seems as if human resources have a secondary role at a time when its function should be more in demand and more valued (Saint-Onge, 2001).

Human resource management has a key role in supplying knowledge within the organisation. To change an organisation, the authorisation and configuration of human resources must be considerably transformed. Realisation problems occur when the old organisation collides with the new reconstruction of the business and implementation of new objectives. The organisation faces new key issues revolving around their limitations, creating an environment where learning is a norm and knowledge is applied in different ways (Saint-Onge, 2001).

According to Patterson, (2003), Hafeez et al, (2003), Saint-Onge, (2001), Davenport, (1999) and Badawy, (2004) human resources can achieve competitive advantages by having the necessary business talent available to execute business strategies. The strategy on how to develop human resource management is a time-based dynamic analysis. This is accomplished by having a process to implement an effective workforce and a cost analysis. Many organisations implement some kind of HR (human resource) information system to anticipate future needs. However, it seems that few HR leaders use this information or data to analyse and support the business strategy in the different decisions within the organisation. Information and data should provide HR leaders with competitive advantages when it comes to turnover analysis, cost analysis, workforce planning and employee development (Patterson, 2003).

Simmons (2004) states that a staffing plan involves the creation and review of the strategic plan:

- What impact will this have on the plan and direction of human resource requirements?
- What staffing requirements must each project implement?

Having a system that provides the organisation with the information concerning the different resources can supply a valuable analysis on the fit or gaps in skill or competence that a company possesses.

For human resource management to work within an organisation it needs to accomplish a process of maintaining current workforce data, skills needed, skills the company possesses, then identify and fill any gaps that may occur, to be able to forecast future workforce needs and identify current talent gaps (Patterson, 2003; Saint-Onge, 2001; Simmons, 2004). There are four steps when compiling a strategic staff resource plan for human resources (Simmons, 2004), these are as follows;

1. Determine current and future needs.
The most common way companies work is to fulfil resource requirements as they arise rather than anticipating and trying to plan for them. The first step is to produce a strategic and operative plan to determine what resources will be needed at present, within the short-term time frame and also for long-term future plans.

2. Assess current staffing situation.
Investigate the resources the organisation has and take advantage of the different resources. Many organisations do not know what resources they have. If they are ignorant of their resources, they are not able to use them. Once resources are charted, the work of comprehending each employee's working skills and experience begins. Simmons (2004), pinpoints that there should only be one database resource within a single company which handles human resources. According to Simmons, this is because resource management cannot be effective unless it takes on an all-encompassing view of the organisation.

3. Identify skills gaps.
When skills mapping within an organisation has been done, an assessment plan for future needs and a current skills inventory can begin. Match these two pieces together and uncover any skills gaps that the organisation may have.

4. Generate plans to fill gaps.
Companies that don't manage their human capital effectively. They are often not aware of skills gaps. Nevertheless, companies that have assessed their needs and carried out an inventory of their skills have many more options at their disposal, which can easily be seen. Using this method, the company can pick and choose the most efficient or cost-effective for any given situation.

During the course of this process Simmons (2004) states that you should not forget the management team because they are needed for this to work. Planning affects management infra-structure. Messmer (2003) explains that allocating the proper resources for managers staffing projects is one of the challenging tasks that managers have. Not only is it important to carry out staff planning, managers should be available that have the ability to take their teams through those plans. Staff planning helps companies get a clear overall view and avoid any pitfalls that may occur. Reassessing staffing practice should be done regularly in order to

meet the requirements from the changing business demands. Messmer (2003) proposes that management in the organisation should conduct a more formal assessment on the human resource needs and requirements for the future, each year.

This would enable the human resource managers to have a more efficient source, to be able to recruit and to staff for future business needs, (Patterson, 2003). Human resource management must have a plan for anticipating future needs of staff which is absolutely critical and thus, the organisation becomes less vulnerable. Anticipating workforce needs is a critical element, which enables the positions to be fulfilled as quickly as possible for productivity and the complete unit to remain. Anticipating needs is not the only factor; cost is a very important one because, according to Patterson (2003), labour cost is one of the largest expenses for most organisations.

Information about labour costs not only determines the allocation of such, but also the way the organisation hires, retains and develops work practices. Workforce planning provides a competitive advantage and enables human resource managers to successfully plan labour needs (Patterson, 2003). Because many issues are dependent on the project's time schedule and when this product will be released on the market, timing is a critical issue (Simmons, 2004). Furthermore, companies that do not plan staffing are only able to react to events that occur. The outcome of this is that they try to solve the event at the last minute, which results in major costs to hire the staff they need at that moment without looking within their own organisation (Patterson, 2003).

Determining cost savings in present and future areas is a human resource process that will fine-tune process and strategy issues and enable mangers to better plan for coming years. Messmer (2003) states that this process takes time, practice and constant reassessment. By proactively addressing the staffing issue the company can maintain and develop intangible resources. This process will give the company advantages for any future business changes including demands and needs. Employees will be more motivated when they receive support from the organisation and this in turn will affect the outcome of their performance.

Messmer (2003) shows that a twelve month plan should be developed to show any decreases or increases of the workforce that could be useful for anticipating projects and dealing with any unforeseen projects. You need to look at ongoing projects and calculate how many labour hours are needed. When the calculations have been completed, the managers know what the average labour hour demand is and can plan accordingly (Messmer, 2003). The manager should always consider that there may be changes that can affect requirements and labour hours. Messmer (2003) states that there are four primary areas that causes peak workloads:

1. Rely on existing employees.
2. Add full-time personnel.
3. Bring in temporary accounts or project professionals.
4. Hire an accounting firm.

Figure 7 describes the historical view on human resource strategy which is dependent on the time period, method and criteria for the company to change and adapt to the changes on the market (Belbin, 2004).

Time	Criteria	Method
Pre-industrial	Category: Age Gender Family Social group	"Visual inspection"
Industrial	Qualifications: Experience Education Skill in one's trade (craft)	Degree Selection
Post industrial	Personnel selection: Team roll Personnel direction	Data matching Guidance Interview

Figure 7. A table showing Belbin´s 2004, p.22 historical view on human resource strategy criteria.

Schafer (2004) proposes a solution on how to control the resources to match human capital and IT managers in a company. Workforce management is an especially important matter for project implementation but thus far has not been the leading issue for many organisations.

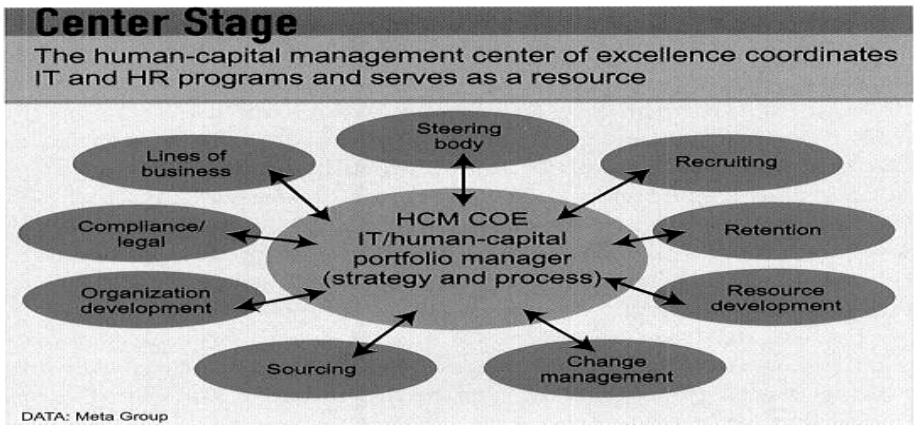


Figure 8. A model showing human capital management centre (Schafer, 2004, p.67).

Schafer (2004) pinpoints that there is much written about core competence and how to recruit the proper resources and how to manage them, but there are very few companies that actually integrate these practices into the organisations. According to Schafer (2004) 25% of the companies who stated that they were using the model in figure 8, showed that they had a "Knowledge-doing" gap when it came to implementation of human management centre practice. Those who succeed in implementing this method have better retention, re-education and recruitment and are in a better position when they attain profitability targets. To avoid these kinds of problems in the future, Schafer (2004) states that organisations should improve their IT and human resource processes to be able to maintain and manage resources and skills. To accomplish that they need to have a human capital management centre of excellence.

Competence

What is competence?

The word competence comes from the Latin *competens*, which is the present participle of the verb *competere*. This verb consists of two parts; *com,* which means "together" and *petere*, which means "to strive". Thus *competere* accurately means "to strive together" (Frame, 1999). The changing environment of business today sets new competence demands throughout all levels in an organisation and especially in project work (Ruuska et al, 2003; Österlund, 1999; Macheridis, 2005; Frame, 1999). What is the impact of these new demands on the staffing process of projects?

Österlund (1999) states that competence is the output of the performance by an individual or a group. Competence encompasses more than just knowledge. Competence in research and development work is executed by individuals in a group that are living systems. These living systems are a combination of individual competences, as well as group competence. This involves skill, experience, the ability to communicate and possessing values. Österlund (1999) defines competence;

> *"In my concept of competence, ingredients include the added skill to use knowledge and experiences available as support from external sources and support of tools such as computer calculation means."*
>
> *(Österlund, 1999, p. 41)*

Organisations face new challenges as their environment changes in the multiple, flexible and the complex work systems. These changes require that the technical, procedural, organisational and human elements have to be integrated (Ruuska et al, 2003). Shifting work contexts and the project organisation set new demands on the competence that is needed for this work (Ruuska et al, 2003). According to Frame (1999), the common denominator for competence development is; competition.

The reflection made by Frame (1999) is that the project seldom fails because a PERT-system crashes; they often fail because key members lack a good people skill which means the development of solid empathy and inter-personal relationship capabilities fail. Other soft skills that have been proven important are political skills, team-building skills, listening skills and communication skills.

According to Frame (1999) project management competence is divided into three levels:

- Organisation
- Team
- Individual.

Organisational competence

Core competence is mentioned by many (Hafeez et al, 2003; Davenport, 1998; Porter, 1980; Frame, 1999; Ruuska et al, 2003), as being the basis for devising business strategies and offering unique products and services to customers. Companies are recognising that their employees are their most valuable assets. There is an effort by many organisations to measure and manage the company's; skills, knowledge and information by using different methods as indicated by Hafeez et al (2003). Organisational competence is independent from individual

competence. This means that the organisation's systems, mechanisms, processes, technologies and structures are distributed among its people. Organisational actions are based on human competences at work in such a way that enables the organisation to remain viable. The corporate competences are "owned" by the organisation and tend to endure over time despite the comings and goings of individuals; specific personal competences that are possessed by one individual (Ruuska et al, 2003). The following items are needed for competence to be fully utilised in an organisation (Österlund, 1999):

1. Divide the organisation into two; one section focused on speciality (fragmentary) and the other on a systemic (holistic) approach.

2. Divide into function (technical) and coordination (administrative and management) competence. The administrative function provides us with finding the resources which support the organisation. The management coordinates these resources.

3. Support the groups or members available in the living system that perform the process task. The product development process requires many technical decisions. This requires a competence that is appropriate and has in-depth skills.

4. Coordinate task activities and resource allocation. The most common way is to assign a project to control process performance. To enable this to work, both project management and system design have to use competence to be successful.

5. Divide competence by time objectives into experience; operative (present), strategic (future), basic know-how of technological, business, and cultural issues. The current work on the development of competence has to meet new product development needs in the future. The communication system provided by earlier R&D work requires competence transfer.

Team competence

> *"The process of taking a collection of individuals with different needs, backgrounds, and experiences and transforming them by various methods into an integrated effective work unit."*
>
> *(Ruuska and Vartiainen, 2003, p. 22)*

The purpose of creating an effective team is clear but the process of developing a team is more difficult to determine. Effective project teams are characterised by both task and relationships factors. Frame (1999) reinforces that for a project to succeed, people need to work together as a team. This means that they need to reorganise and address the common goal. In addition, they must be willing to work together to achieve it.

Working in teams is the basic unit of a project. The major trend in management practice is to recognise the complexity of the business environment that requires team-based solutions for specific problems. The advantage of having teams is that they provide the organisation with a cross-functional insight into possible project solutions (Frame, 1999).

Individual competence

Österlund (1999), states that there are different levels of individual competence.

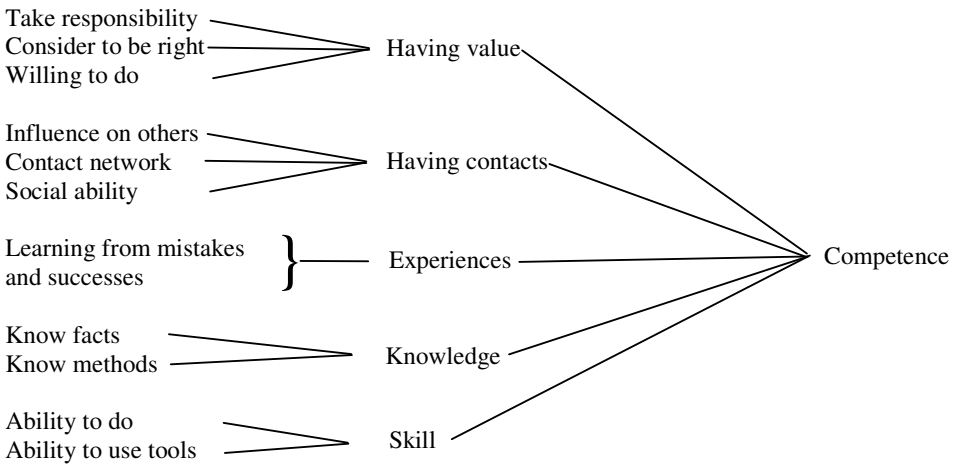


Figure 9. A model defining competence described by Österlund (1999, p. 42)

Competence is a combination of several factors as seen in figure 9; values, contacts, experience, knowledge and skills (Österlund, 1999). A more detailed description explains that intellectual capital is a special form of human capital that is codified, formalised, captured and supplied to produce a more valuable asset (Hafeez et al, 2003).

All the organisational factors influence and affect the individual development of members in projects. The strength of working in projects is that they give higher possibilities and different opportunities to develop, as seen from an individual level (Macheridis, 2005). On a practical level there are several advantages that contribute to individual development of project members. Work is more inspiring, educational, increases subject knowledge, increases insight into the organisational structure and function. The project members contribute to the development of strategies and local aims to achieve better rational and dynamic solutions. Examples of these are; total quality management (focus on quality), time-based management (focus on the time) and lean production (focus on resources).

> *"Unless we learn to learn from and with one another, across traditional organisational and cultural boundaries, little real progress is possible."*
> *(Roth and Senge, 1996, p. 95)*

Antoni (2003) emphasises that learning from experience is an important element that can influence organisational survival. It is highly probable that experience developed during one project may stay within that project. According to Antoni (2003), project members have no reason for putting any effort into describing their experiences. Learning between projects strongly contributes to reducing inefficiency within organisations. Learning in a systematic way from project to project is a rare phenomenon (Antoni, 2003). In the study that Bourgeon (2005) carried out on staffing new product development projects it shows team members who had taken part in various projects within the company had the better benefits of learning from one another, resulting in a learning curve of 58%. There is growing discontentment on how to use knowledge both in practice and theory (Roth, 2002; Antoni, 2003; Hagman, 2002). Lindkvist (2001) states that the knowledge creation process is complex and needs many

different conditions to work. Organisations should use lessons learned from the past to gain knowledge both from internal and external sources (Newman, 2000).

Critical competence in projects

The research from two projects conducted by Ruuska and Vartiainen (2003) reveals the critical competences involving project work. These two projects were in different areas; a technology project and a delivery project.

The technology project revealed that; organisation, administration and management affected the project the most, as concerns competence. This was followed by communication, interaction and definition of the goals and visions of the project. Finally areas ranked that affect projects were knowledge and reporting structure in the technology project (Ruuska et al, 2003).

In the delivery project the most critical section appears to be technical competence of the product, followed by organising the project and finally understanding the overall project at all levels in the organisation. The outcome of these two case studies shows that the most critical competences were organising projects and project management (Ruuska et al, 2003).

Team composition

Today, companies are looking at new product development projects as learning tools. But very few pay attention to the project team composition in this practical context (Bourgeon, 2005; Cadle and Yeates, 2004; Ricciardi, 1999). Belbin´s studies reveal that different personalities are needed for the project to become successful. This makes team composition an important issue to consider when starting a project. The key to these studies shows that there is not one right type of person that makes an ideal team player. A mix of various types gives good results. If all the specified personalities are present in the team, the chances of project success are good. The mix of an eight-personality team that Belbin describes has been developed to counterbalance the group's strengths and weaknesses. According to Cadle et al, (2004) this balance is required at all stages of a project.

It is essential to know that project managers should not select their teams on the basis of Belbin´s team roles but to use the knowledge to avoid only recruiting or promoting personalities similar to themselves (Cadle et al, 2004). For projects that are already up and running, assessing which team roles are present will highlight team and strengths weaknesses. By investigating present projects the project manager can improve the project's performance (Candle et al, 2004).

Belbin defined eight types of personalities, as stated below (Cadle et al, 2004):

Coordinator CO	This person can be any member in the team, not necessarily the appointed leader. The role provides consensual leadership, coordinating team effort, but is somewhat lacking in originality.
Shaper SH	This person is the alternative leader, the shaper leads “from the front”; pushing activities forward and bringing shape to the team. This person is dynamic and can be inspiring but can also be abrasive.

Innovator (Plant) PL	This person is the source of original, inspiring ideas. The innovator is creative but sometimes forms a personal attachment to unrealistic ideas.
Resource investigator RI	This person is the team's link to the outside world. This person may be a source of many ideas, but they are not always original ones. This person knows whom to contact to get the right information, which can help the team solve a problem. When the problem is solved this person loses interest in the implementation of the solution.
Monitor evaluator ME	This person separates the team's ideas into those which are practical from those that are not. This person keeps the team on track but can be interpreted as the one that is insensitive to other people's feelings.
Team worker TW	This person is a sensitive and emotional person. Cares about the personnel needs and can easily become upset. The team worker works hard to keep people in the team happy and maintains a positive atmosphere, but is often indecisive in a crisis.
Implementer IMP	This person has practical organising skills, takes the ideas and makes a process and a schedule. This person likes milestones and plans but can be inflexible when things have to change.
Completer CF	This person is the one who worries about what can go wrong in the project. The one in the team that checks up details focuses on the deadline and pursues progress. This person can be perceived as being too fussy as compared to the other team members.

There are many different factors that can benefit from the success of a project team apart from individual composition. Melymuka (2004) states that projects benefit from few members, involved members with the right attitude and work ethic. Another factor is; familiarity. Team members who have worked together before have the benefit of already knowing how to communicate, which reduces time and energy for building a project team. The problem with working too long with the same people may mean that the team develops a homogenous approach to problems; the phenomenon called "group thinking" (Bourgeon, 2005). But the most important factor is availability for working on the new project. That requires planning resources and when they are going to be needed. Melymuka (2004) states that you should not start with a project team without the available resources otherwise it is bound to fail. Bourgeon (2005) describes the duration of new product development projects which can exceed five years, but there are few that pay any attention to this obvious factor. Teams often have inter-group conflicts where the outcome usually reinforces intra-group cohesion.

In summary, the theoretical framework shows that project management has developed into a technical instrument base to facilitate the outcome of a project. This progress has continued based on its completion and introduction on the market. This competitive nature has developed the dynamic complexity that projects face today. In conjunction with the technical development, psychological factors have increased in importance in the project's context over time. The present focus is in knowledge management and resource management that

organisations have. Factors, such as, competence, knowledge and team composition have gained more attention and have rapidly increased during the past years within project work. Team relations and the way the organisation assigns projects seems to affect organisations and their outcome. All of this suggests better involvement of the human resource department in the organisational process. An overall view of the gaps that one organisation has should be achieved by mapping competence in an IT system. Awareness of the organisation's strengths and weaknesses enables the organisation to act and improve their performance inside and outside the walls of the organisation.

METHOD

This chapter presents the scientific approach used in this study, showing the chosen participants, procedures, research instruments and design.

Participants

This thesis was based on a case study approach. Such a case study, as explained by Jacobsen (2002) should be clearly defined in place or time. In this case, one organisation was investigated during the spring of 2006. The participants of this study responded to a questionnaire and some of them were interviewed. Project managers, line mangers and project members answered the questionnaire while the human resource staffs were interviewed. They were all involved, directly or indirectly, in an ongoing product development project.

This approach was selected in order to gain a better and more profound view from the four parties involved. All except two respondents were given the questionnaire in Swedish (appendix 3) this was done in order to get a higher response rate, given that the native tongue of most participants was Swedish. Two were given the English version (appendix 2). The overall response rate from the questionnaire was 57%, project mangers 64%, line mangers 48% and project members 59%.

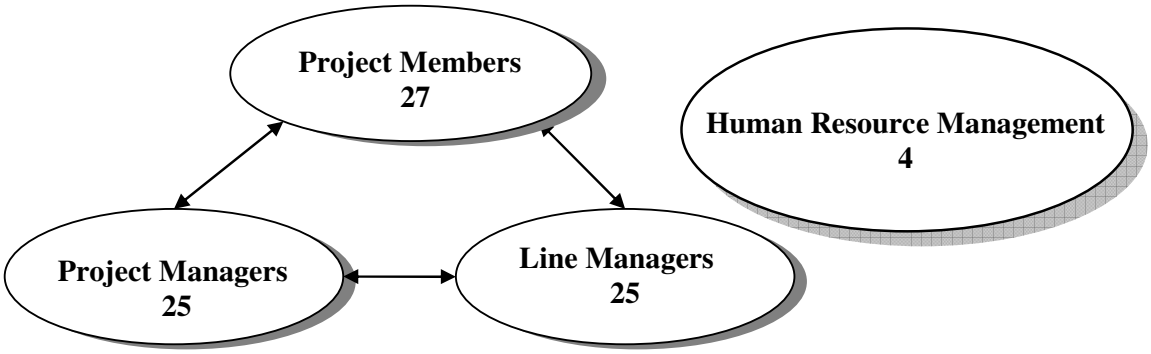


Figure 10. A diagram showing participants involved

The questionnaires were distributed to 25 project managers, 25 line mangers and 27 project members, while four people from the human resource department were interviewed, see figure 10. Performing the investigation this way gave the author a deeper understanding of the present staffing process and in addition gives 3P, Volvo AB an insight into their present staffing process.

Design

Quantitative as well as qualitative data was gathered. The quantitative data provided the basis of the study, while the qualitative data gathered from the human resource interviews was used to provide a deeper understanding into the process. The aim of the study was to gain conclusions on how and why the staffing process was used when providing a project with the selected staff. This case study describes an extensive and descriptive investigative approach (Jacobsen, 2002).

The data from the questionnaire was analysed using SPSS (Statistical Package for Social Scientists), an analytical computer program. The data from the interviews was analysed

manually, summarised following each interview and categorised. The SPSS was used to get an overall correlation of participant views in the three areas as stated in the aim. The average values were used to extract the overall data from the questionnaire. Using SPSS, the author applied an interpretive approach as shown by Hartman (2004), which is based on the hermeneutic theory on the areas investigated. By using this approach, the author intended to validate the study in a reliable manner.

Research Instruments

Interviews were performed in a semi-structured way to extract the factors that affect the staffing process (see appendix 1). A time frame for each interview which lasted from 50 minutes to 100 minutes was used. Each interview was recorded using a tape recorder. After each interview the author made a clean copy to be able to extract and use comments without putting own thoughts and reflections on the data that Jacobsen (2002) pinpoints as important during an investigation.

The questionnaires were divided into four sections:
1) General information.
2) Staffing process.
3) Competence, collaboration, effective information.
4) Belbin´s team composition test (Belbin, 1981).

The first four questions in the questionnaire were stated to extract general information from the respondents. Staffing process segments included fourteen questions; a combination of one multiple-choice question, one open question and the rest were closed questions which were aimed at a specific group of respondents. The competence section was covered in the multiple-choice questions combined with one open question and some correlation questions on the subject matter. The last seven questions were on team composition as stated by Belbin (1981) which only project members answered.

Delimiters in this study were; sources consisting of one organisation and one project in this organisation. The amount of subjects was limited to three in this investigation. The author also excluded consultants as a group in this staffing process. The case study approach was selected because of the time factor and thus, enabled the author to execute this investigation.

During the course of this research, the author used an unbiased, impartial and objective approach. In spite of this, misinterpretation on the part of the author could occur, but the author hopes that they are minor and limited.

Procedure

How to conduct an investigation on the staffing process was discussed at the first meeting that the author had with representatives from 3P, Bengt Münter and Marje Seimre. During this meeting they discussed benefits the organisation would gain from this investigation. Marje Seimre was appointed thesis supervisor at 3P, to help and provide the author with information needed to accomplish this thesis.

Project X was selected in January 2006, following a discussion with the supervisor. We decided to keep the project name unknown, based on security reasons. The scope of project X involved 27 project members that all represented different departments and different levels of

responsibility in the 3P organisation. Even though they had different posts in project X such as; project manager, designer, purchaser, market representative. They were all viewed as project members which they also stated in the questionnaire. With the help of the supervisor at 3P, 25 project managers were selected. All project managers selected had different positions and responsibilities in the organisation. A similar approach was taken with the line managers but Bengt Münter, who had more experience and knowledge of the organisation, helped to select the appropriate people.

During this investigation it became clear that the human resource department was not involved in the staffing process of projects. Using this information, the author re-evaluated and redesigned the approach of the investigation. The supervisor at 3P proposed the human resource respondents at the end of March 2006, but the final selection was made by the author. All interviewees were recorded and a clean copy was made to avoid any misinterpretations. The interviews were made during April 2006. All respondents were given the opportunity to contact the author in case they felt that they wanted to clarify certain information regarding the areas of investigation. Confidentiality was promised to all respondents and all data has been presented in the context of the whole group's average response.

RESULTS

The results provided in this chapter were from the three participant groups and the human resource respondents. Data from the questionnaire is stated in appendix 4 with numbered tables which the author refers to in this chapter.

General information

The total response rate from the three parties was 57% (table 1, appendix 4). For this investigation the response rates from project managers was 64%, line managers 48% and project members 59%. These tables show us that 18% were women and 82% were men, which according to the automobile organisation is a common distribution among gender. The age range in this investigation can be seen in table 2 in appendix 4. The majority of the respondents, 43%, were within the age range of 36 to 45. Table 3 in appendix 4 shows the investigation age histogram. Results from question 1.4 (table 4, appendix 4) provided the information that half of the respondents in this investigation had worked longer than six years on projects.

Staffing process

The results show that the staffing process of projects differed from the recruitment process for a line position. The human resource interviewees explained that the present recruitment process for a line position was a more formal procedure than the staffing process for projects at 3P. The line managers provide the projects with the people they need. For question 2.8 (table 12, appendix 4), on whether there was any resemblance between in-house staffing processes and external staffing approaches the average results were 45%.

		Internal external staffing process Q2.8				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	2	10	4	0	16
	Project member in Project X	2	4	10	0	16
	Line Manager	2	6	1	3	12
Total		6	20	15	3	44

Table 1. A table showing the differences between the approaches for internal and external staffing

Question 2.14 (table 17, appendix 4) clarifies that 93.75 % of the project managers, 50% of the project members and 66.6% line managers stated that the line manager made the final decision in the staffing process which concurred with the views from the human resource interviewees.

The external recruiting process was done by the “Recruitment Centre” which was located at the central administration section in the human resource department. The “Recruitment Centre” handles all the advertising and recruitment processes for all line positions for all departments within Volvo AB, not just 3P. For a person to get a line job position he/she has to get through the first selection from the recruitment centre and go through several stages of interviews with the line managers. The human resource interviewees stated that during the recruitment process the “Human Resource Business Partner” who was often one person is dedicated to helping line managers to evaluate the people in this process. The most compatible people are interviewed by the line managers, who also make the final decision

when hiring a person. The person who is eventually employed is automatically involved in projects if the project involved the area that he/she manages. Results indicated that line managers had the overall input for their staff. The line managers were able to staff projects in the organisation based on the ones available to participate in projects and their competence level.

The staffing processes of projects did not involve any advertising or recruitment process this was shown in the results of the questionnaire as well as in the interviews. The results presented by question 2.3 gave a picture that 68% of the respondents did not have to apply for a project position (table 2, appendix 4). This was combined with the results presented by question 2.1 (table 5, appendix 4), that 41% were not involved in a staffing process for projects. Bearing this in mind, question 2.2 (table 6, appendix 4) attained the response that the majority, 57%, had been working like this for the past four years or more.

		Apply for projects 2.3			Total
		No	Do not know	Other	
Work position	Project Manager	14	2	0	16
	Project member in Project X	9	6	1	16
	Line Manager	7	0	5	12
Total		30	8	6	44

Table 2. A table showing the application process for projects at 3P

See below for those who expressed an opinion in the space for other comments. All the comments were summarised and expressed in the outlines such as the one below. The line manager group constituted 13.6% of the comments on question 2.3. Project members clarified that internal channels are used when staffing projects; 37.5%. The rest of the respondents, 56%, expressed their opinion in a similar manner as the samples below.

Comments from line managers for question 2.3

"This is founded upon the line manger's area of responsibility."

"Before staffs are appointed to one project, one has an individual conversation with the project member; this is to check the ambitions of that person and their ability to perform the task."

Comments from project members for question 2.4

"I have been appointed by my line manager."

"There is no application process for project members in project staffing."

The results (tables 14-15, appendix 4) highlighted that human resource representatives are present at the external requisition. The overall mean value was 31.8% but for line managers, this was 58.3%. For the in-house staffing process, 59% of the time a human resource representative was not present.

When the human resource interviewees were asked if they could consider contributing to the staffing process, they commented positively and were very forthcoming in their approach; this is a sample from the comments.

"It would be good to have a more open staffing process for projects but we have to remember that this is not the hardest part; it is finding a way to conduct and perform this process. If we consider using the same process as for external recruitment it will require a lot of administration. Right now, I can say that we do not have the resources or time to perform this."

No computer programs were used in the staffing process. This was commented on in questions 2.5 to 2.7 (tables 9-11, appendix 4). 3P had a computer program called Key Skills that was new to the organisation. The four interviewees at 3P were questioned on their present work in the area of competence. Responses indicated that work could be carried out in a web-based computer program that would provide information on competence levels in the organisation. This program was called Key Skills. It was used during professional development dialogues called "PBP - Personal Business Plan". Each member of staff has such a dialogue on a regular basis with his or her line manager. The program was new and had not been applied and implemented in all units at 3P. The purpose was to record competences within the organisation which would facilitate the decision-making process. Programs were structured according to the organisation's overall strategic business plan and broken down as follows; business units' → departments' → sections in these departments → each individual.

Each unit area had approximately ten to fifteen key competences which were described in a comprehensive manner. One respondent commented on this competence process as follows; *"In reality, it is not as easy to identify the competence gaps as everybody seems to think".*

The comments below are from the three participants on the internal and external staffing approach;

Comments from project managers for question 2.9

"It is a much more extensive process when staffing externally which we should also use for the internal staffing processes."

"The selection of internal staff is very limited, due to the following factors; special competence, accessibility of staff and experience."

"The internal promotion for staffing projects is handled by the line managers, the project managers accept and receive. If the project managers purchase an external consultant then he is the one who has the final choice."

Comments from line managers for question 2.9

"The one who is hired as a consultant will be part of one or several projects which is a large part of their working assignments. Consultants that shall participate in projects do not have to apply to the project they are assigned to, the project depends on their field of work."

"The internal process is dependent on staff available, which is often limited but if we hire externally there are a larger set of individuals to select from."

"External recruitment is just recruitment but using an internal appointment you know the staff you have in your own department and their competence."

Comments from project members for question 2.9

"For the project that I have been involved with, the members all are from some part of the organisation, for example, Chassis, Cabin, Electrical and Electronics Systems Engineering, Quality. Each line manager staffs the project with his/her own personnel that he/she considers suitable. To be able to handle this assignment the line mangers must also have the necessary competence to be able to staff the project in order to hire appropriate people. That said, the largest selection process is done when recruiting externally for line positions where they understand taking on the right people with the right competence."

"For internal projects; one ends up in them automatically if one's work is processed in the project. As I far as I can see, there is no staffing process at all on internal projects."

Question 2.12 showed that these six factors, as summarised in figure 11 below, are seen as the most important elements when selecting staff at 3P. These key elements are:

- Knowledge
- Ability to cooperate
- Ability to communicate
- Motivation
- Power of initiative
- Experience.

The figure shows the amount of points that each of the six factors received from the three participant groups.

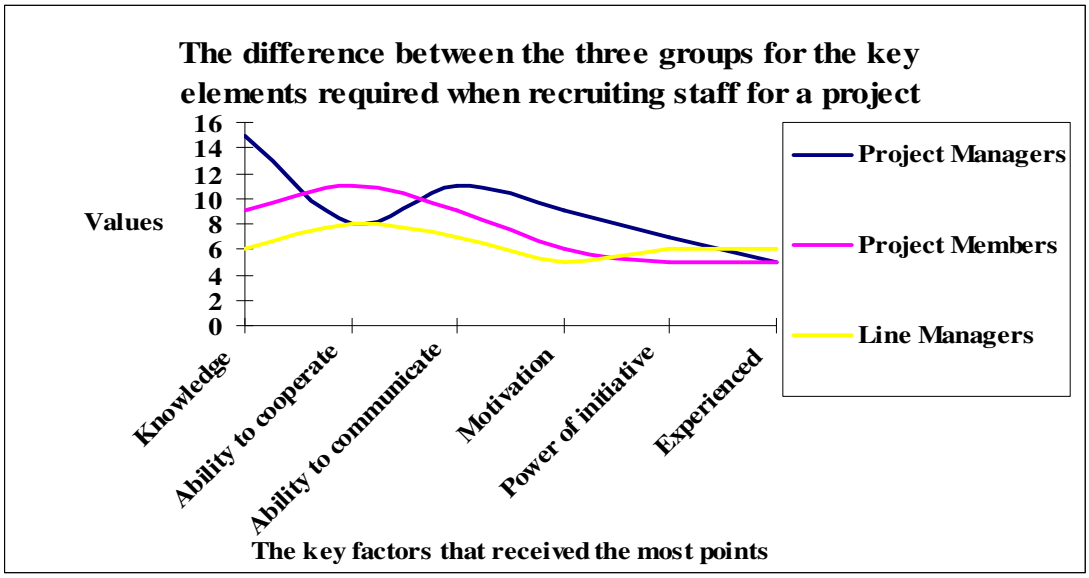


Figure 11. A graph showing the results of the key elements that are important when hiring staff, according to the respondents

The major difference seen in this question was the knowledge factor, where the response rate of the project managers was 93.75%. This means that only one project manager did not have

knowledge included in his/her answer. Other differences between the three participants was the ability to cooperate, where both line managers and project members held the same view while project managers considered the ability to communicate as more important. All three participants considered that motivation was important. Experience was perceived as a relatively unimportant factor among line managers, scoring 50%. While both project members and project managers rated its important with only 31.25%. All the key factors for the three groups are presented separately in appendix 5.

During the interviews there were many comments on the organisation and responsibility issues from the human resource respondents.

Comments from human resource interviewees on the staffing process

"In today's staffing process for projects, the human resource department is not involved at all."

"I would like and I think that we should be included in this process for projects and their staffing process, especially in the major ones at 3P."

"On numerous occasions I have asked if we could contribute to the staffing process for projects. I personally believe there is a need and that we can help."

"3P is a project machine and we are not involved in project work."

"The line organisation is still very strong and in charge of the staffing process and many other decisions as well."

Competence, collaboration, effectiveness

Appendix 6 describes the overall picture of the respondents' educational background in this investigation. The results showed that among project managers there was an even distribution holding a bachelors or a master's degree. The results from the project members group showed that 37.5% of them had a master's degree which was the majority status in this group. The line managers group expressed an equal amount, 33.3% of bachelors' degrees and Senior High School degrees qualifications. Another result presented in appendix 6 was that 23% had undergone a project management course. The results attained from questions 3.2 to 3.7 are seen in figure 12 below, regarding competence factors:

1. Theoretical knowledge.
2. Social competence.
3. Practical knowledge.
4. Experience.
5. Ability to use tools.
6. Motivation and willingness to do things.

The results showed the following picture; experience and knowledge when handling tools, 29.5% chose strongly agree, but the majority of the respondents only chose agree, rating it at 59%. The questions on theoretical knowledge gained 61.4% for agree. The overall results from these questions were that motivation and willingness to do things was the most important factor with a score of 56% on the remark showing strong agreement.

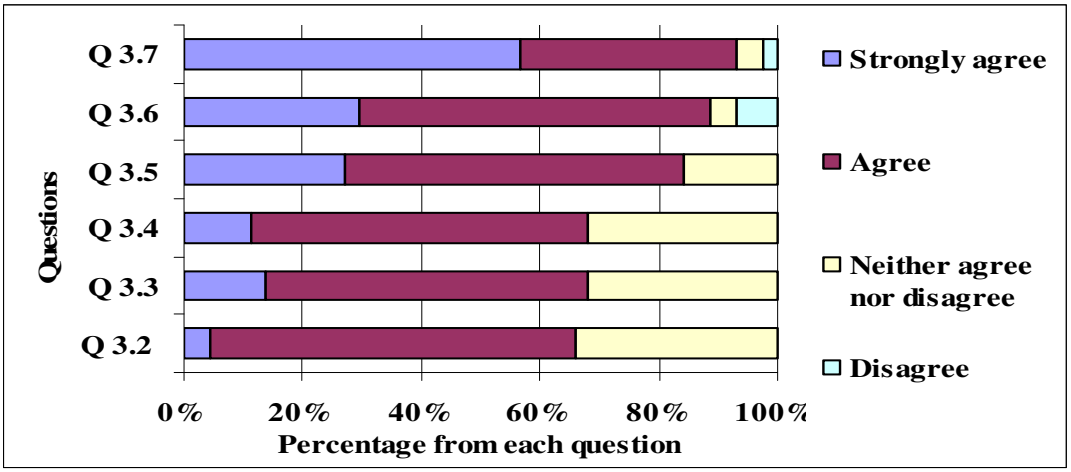


Figure 12. A graph summarising the responses from questions 3.2 to 3.7

In the questionnaire, the section on collaboration began with question 3.8, see table 3 below. The respondents had to answer if they thought team composition affected project work. The results gave a mean value of 97.7% yes, with only one answer stating; do not know.

		Team composition affects working climate Q3.8		Total
		Yes	Do not know	
Work position	Project Manager	16	0	16
	Project member in Project X	16	0	16
	Line Manager	11	1	12
Total		43	1	44

Table 3. A table showing that team composition affects the working climate of the present project

In the section on collaboration it became clear that respondents felt that they did not have enough time to get to know one another in the team; 45.5% (table 25, appendix 4). Even in a limited time period, they felt that that they had good collaboration in the team; 52.3% (table 26, appendix 4). Comments that arose from these questions were; that collaboration differs depending on what project it is and that the size of the project has an impact.
Respondents expressed their opinion on factors that influenced projects at 3P.

Comments from project managers for question 3.11

"We have little in common in the group and everyone works on their own goals and agendas."

"Communication is lacking combined with high workload."

"Lack of time affects communication which shows by the things we do wrong."

"The largest factor is the turnover of staff within the project team during a project which means gaps in knowledge, loss of experience, contact network, and it also affects the ongoing process."
"Project members have got enough time, prioritise other things are exchanged during the project and so on."

Comments from project members for question 3.11

"Insufficient communication and synchronisation in projects."

"As in all projects there is often a lack in communication (decisions, changes, etc)."

"As always there are a few gaps in communication from different parts and levels in the organisation."

"Some communication is lacking because we work in parallel in several projects."

"There is often poor representation at project meetings, due to people's priorities on several simultaneous projects."

Comments from line managers for question 3.11

"There are probably project teams that are struggling with the fact that they do not know one another. But I think it is a fact that rules and expectations are not set, which affects the group development. Often, group development follows directions from the line department which I think would benefit the project groups as well."

"The deficiencies usually occur because of ignorance of one or other expectation governed by a combination of a lack of communication."

Comments from human resource interviewees on factors affecting the project at 3P

"We do not get any information of the factors that affect the project outcome."

"In some parts of the organisation there are some difficulties when communicating and the dividing-line between responsibilities from line mangers and project managers is unclear."

The results from the questions on efficiency and effectiveness stated that the respondents felt that they were doing things right in the project by 50%, but felt that they were not effective enough;40% (see appendix 4, table 28 and 29). Another finding was that respondents stated that efficiency and effectiveness varies from project to project and the size of the project.

The correlation part of efficiency and effectiveness in the questionnaire combined the area of team composition and staffing process to examine the effects these two had on project factors, such as:

- Time
- Cost
- Quality
- Conflict level
- Turnover of project members.

The outcome of these questions has been summarised in figure 13, below.

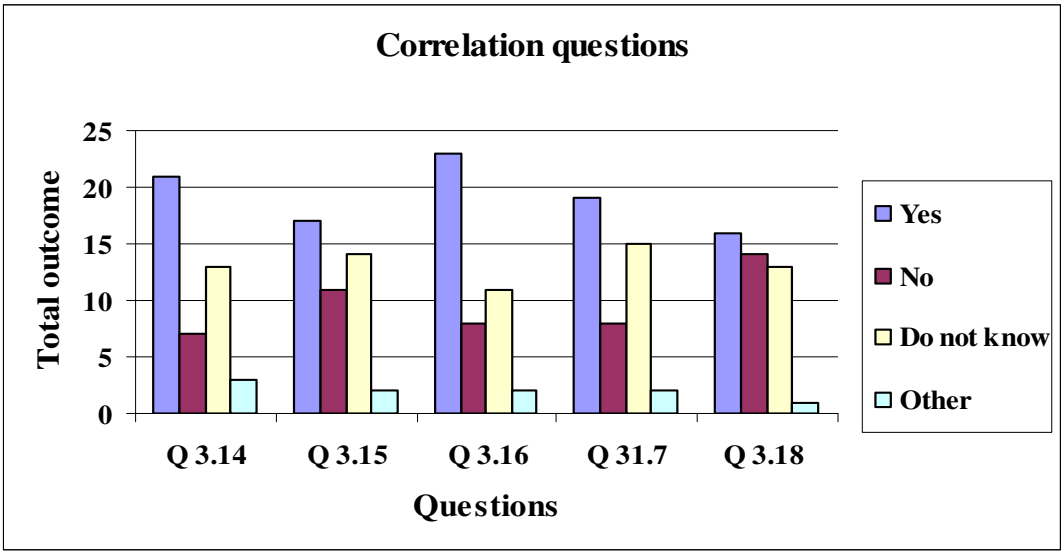


Figure 13. A bar chart showing the findings of the correlation questions; 3.14 to 3.18 and their effect on projects

The results presented in figure 13 show the total points that each remark received. The majority of the "Do not know" remarks came from project members and some line managers which indicate that these two groups are unaware of the factors affecting project work.
The project manager group attained an opposing constellation for their yes responses; 81% time, 62% cost, 81% quality, 62% conflict and 50% turnover. The overall results were that quality, time and conflict affect project work at 3P.

Other areas were mentioned by the respondents when considering any factors that affected the process more than the questions stated above:

1. Coordination between projects.
2. Decision processes in the organisation.
3. Undefined prerequisites at project start.

One line manager summarised the questions posed

"These questions are rather complex to answer because they do not stand alone in this process - how should I put it?"It is like selecting the choicest fruit". The principle is that all our present staff work in projects. There is a large range of competence among them. Normally there are about 30-40 projects (different sizes) ongoing and needs are staffed accordingly. That means that every project cannot be optimally composed. Line managers are responsible to staff projects so that staff from each department is used in an optimum way."

Team composition of project X at 3P

Figure 14 below shows the results from Belbin´s team personality analysis in project X. The 16 project members who answered the questionnaire were classified as follows; the implementer personality had seven members; 44% of the project. Other domineering personalities were completer and monitor evaluator in this project with three people in each category. These three personalities dominated project X team by 81.3%. Project X had one shaper, one coordinator and one team worker but lacked two personalities, the innovator and

the resource investigator. The outcome of this investigation may have been different if all the respondents had answered.

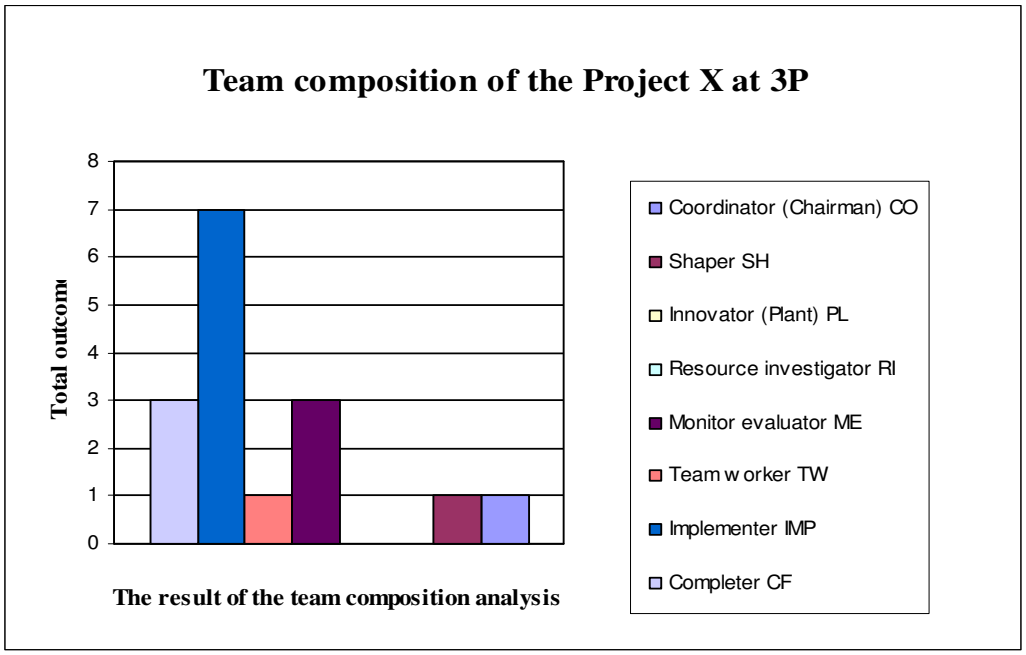


Figure 14. A graph showing the personality types of the project members in project X at 3P

As previously mentioned, the response rate from the project member group was 59%. The results are just for project X and may or may not resemble other project's team composition in the organisation. By studying the results from the project we can get to know its strengths and weaknesses and therefore improve them.

The human resource comments on the process to compose a team.

Comments from human resource interviewees on team composition

"I personally think that we should invest in team composition more, but traditionally we have not worked with this in the human resource department."

"The Human Resource department could assist the project managers, which could contribute to an improvement of the team dynamics. HR could take part in the development and reinforcement of the start of a project team and review the different phases of the process, to see the opportunities of competence development for project members."

"I remember that we hired a consulting firm for a one–week kick-off when one of our large projects began. This was a combination of theoretical and practical exercises that the whole team was obligated to participate in. I cannot forget one of the comments I got from one project manager "Today, after only one week, we stand where most projects usually are after 18 months, by this I mean both in terms of team development and the project plan in detail. May I also add; understanding and acceptance." If you ask me, they are one of the teams that have core spirit and have come further than any project team that I know of."

ANALYSIS/DISCUSSION

The author has broken down each subject and summarised the outcome of the chapter dealing with results using the following structure:

1. General data.
2. Staffing process.
3. Competence.
4. Team composition.
5. Human resource involvement in these areas.

The aim of the questions stated at the beginning of this thesis is answered in this chapter.

General information

The analysis is taken from general information expressed at 3P. This information showed differences between men and women in the automotive industry. The results presented indicate that 3P has a long history of working in project constellations. When cross-examining this factor with another opinion that was expressed; that 3P was heading towards a project machine, the author did not share the same belief and this was confirmed by the findings in this investigation.

Staffing process

This study shows that the staffing process of projects did not have any representatives from advertising or recruitment departments present at 3P. The results showed that line mangers were staffing projects at 3P, since they had the main responsibility to fulfil this task. The worst case, as one line manager stated, was that they hade to staff approximately 40 active projects in the organisation.

Factors mentioned from the chapter on results indicated that 3P was organising their project work within the area circled, see figure 15. The analysis carried out by the author was founded on factors referred to in the theoretical and empirical sources:

1) Communication difficulties both within and outside the project.
2) Large amounts of people were working in several ongoing parallel projects.
3) Project members state that they have little in common in projects.
4) Work with own agendas within the project.
5) Strong line organisation.
6) Large turnover of project members in the present projects.
7) Responsibility issues between project managers and line managers.
8) Coordination between projects.
9) Decision processes in the organisation.

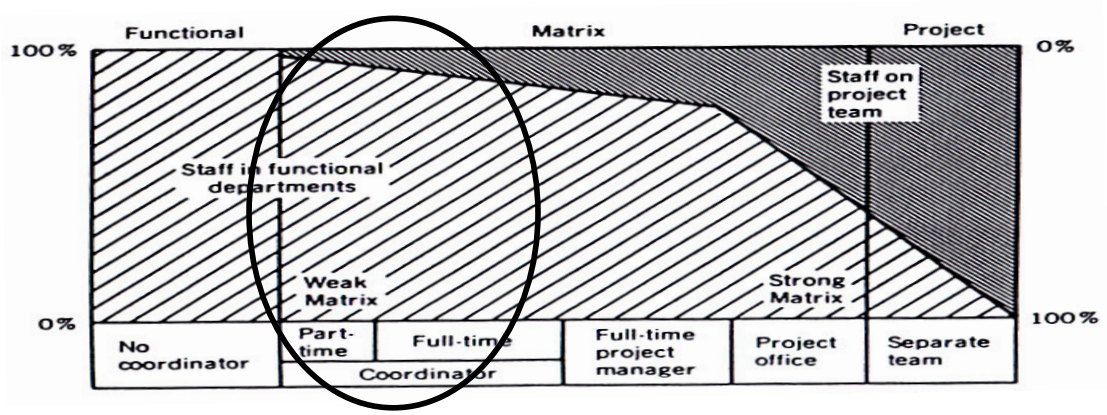


Figure 15. A diagram showing the author's reflection on 3P's project organisation based on Archibald's, (1992) organisational continuum.

The functional and lightweight matrix project way of organising projects has its advantages, such as, being able to use current competence in several projects. People remain in their positions, and can develop their specific skills in their departments. Another advantage is that the project managers have an overall view of the project resources and can follow up and end the project successfully (Rapp Ricciardi, 2001). These factors are encouraging but the situation at 3P showed that the organisation was over-committed with projects. As shown in the empirical findings this contributed to negative feelings in the projects. To conduct projects with the lightweight matrix project approach is considered good, but the case at 3P shows us aspects of an overloaded organisation.

Boddy (2002) stated that it is often line managers or project managers who select project members based on their functional and technical experience. This investigation showed that line managers at 3P had the exclusive right based on their influence and awareness of staff availability, knowledge and experience. In this process the project manager was not involved which was clarified by the questionnaires and the interviews. This process should involve the project managers based on the responsibly they have to the project's outcome. The line managers at 3P were involved in the recruitment process and had experience of recruiting staff to their line position. But, were they equally aware of the factors needed for a project to work? Correlation questions display some areas of ignorance from the line managers on the factors affecting projects at 3P. That is why project managers should be more involved in the staffing process, in consultation with the line managers, to indicate and collaborate some of the factors which may be needed during a project.

As most organisations plan their business activities thoroughly, as Simmons (2004) and Engle (2005) mention but which is often forgotten is the impact on staffing requirements. As Simmons (2004) stated the staffing process affects other plans in the organisation. Staff planning is hard but essential (Engle, 2005; Jones, 2000). The 3P organisation had no insight into their staffing process and its impact on project work. Combined with project workload, this affected not only their projects but also the line manager's ability to staff all these projects in the best way possible. Comments arising from this investigation indicated that there should be more focus of the staffing process of projects. One project manager stated that it should resemble the external recruitment process, but there were others that had not reflected on the involvement of the line managers in this process. An opinion from the human resource respondents was that this should be more in focus and actively worked with. Can we expect

success from our projects without the insight, reflection and awareness into how the staffing process affects the outcome of projects?

As Newman (2000) stated, providing the right knowledge to right people available at the right time is often overlooked. A reflection made by Frame (1999), is that projects fail since people often lack social skills. In their present staffing process they highlighted the following issues as being important when selecting people for projects; availability, competence and experience. When they had to select five elements which they considered to be important (see figure 11) at the staffing process they selected these key factors:

- Knowledge.
- Ability to cooperate.
- Ability to communicate.
- Motivation.
- Power of initiative and experience.

All these factors are important as viewed from the aspect of competence and are important when selecting staff which was gained from the results at 3P. Is it possible that availability is not as important when other issues are present?

Both Bourgeon (2005) and Melymuka (2004) declared that the availability to work in new projects is important but as the results showed the 3P organisation had people working in several ongoing projects, Melymuka (2004) states that you should not start a project without the available resources but the analysis indicated that all projects can not be staffed in the optimum way. Even though the right people were not considered available, 3P was starting projects.

Competence, collaboration, effectiveness

An analysis was undertaken based on educational background in this investigation which shows that project managers had an overwhelming predilection towards the knowledge factor but the line managers considered experience as one of the most important key elements (question 2.12). Competence and experience does not exclude one another but could this be an area of disagreement due to educational backgrounds? The empirical data regarding competence (figure 13) indicated that motivation and willingness are not dependent on educational background. Questions as illustrated in figures 11 and 13 show the same issues that Österlund (1999) expresses as being important for individual competence. The respondents at 3P had a more clear view that motivation and willingness to do thing was the most important factor. Could high work load and juggling several projects simultaneously be the reason for this result?

Before a team performs well they need to go through stages of growth. A team grows by trusting its members. This trust does not exist when a team first comes together. As they work and get the chance to learn about one another and develop productive ways to collaborate on work (Boddy, 2002). The chapter on results stated that team members do not feel that they have enough time to get to know one another which according to Boddy (2002) is an important part of team work. But on the other hand, 3P's respondents feel that they had developed good collaboration within their project teams.

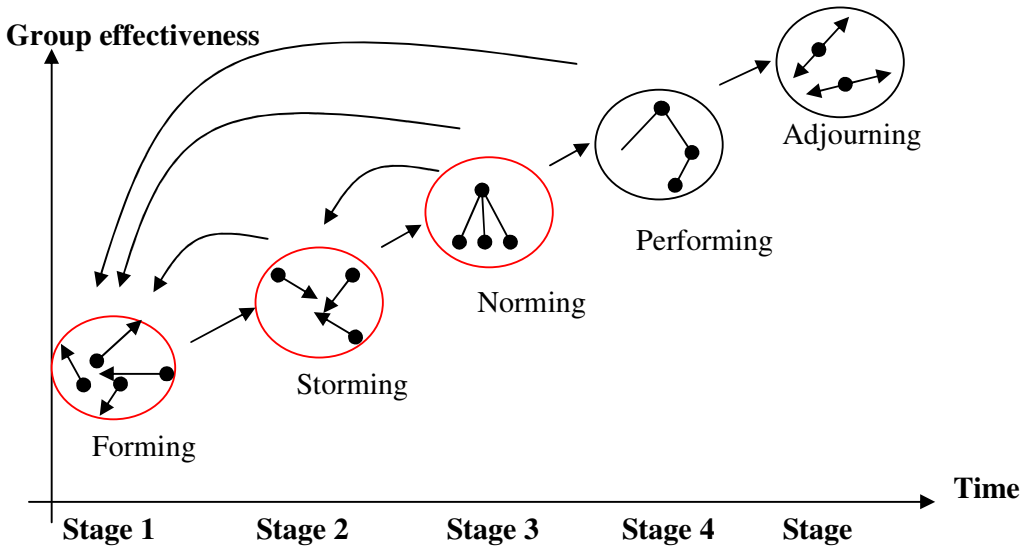


Figure 16. Boddy's view on the project performing stages illustrates with the author views at 3P.

Another finding of this investigation was the large turnover of people in 3P projects. The ability for a project to go through the different phases, which according to the respondents, is one of many factors affecting the team work. As Boddy (2002) states, these stages are essential to get through so that the outcome of the project will be done in time, cost and quality. Frame (1999) states that a team must be able to reorganise and address the common goal and they must be willing to work together to achieve it.

Figure 16 elucidates the author's view on the projects' team work at 3P, showing difficulties encountered when getting through the first three stages with the features mentioned above. Using this analysis, it can be seen that the project teams are not as efficient or effective as they could have been, if they had taken the natural group development processes into account. Data showed that there were many thoughts about potential to improve effectiveness as well as efficiency. These factors affect the mutual goals that a project team has and we should not be surprised by the comment as stated from one project member;
"We have little in common in the group and everyone is working with their own goals and agendas."

One indication from the correlation questions was that conflicts affect the project's team work. Another factor was the overwhelming score of 97.7% of a response declaring that team composition affects project work at 3P. These results, combined with the open comments from the three respondent groups express the following factors affecting projects today in 3P:

1) Turnover of people in the project teams.
2) Communication between team members, projects and different levels in the organisation.
3) High work load.
4) Lack of time.
5) Prioritising issues.
6) Decision changes.
7) Few common agendas.
8) Unclear roles.
9) Unclear areas of responsibility.

The large turnover mentioned above provides another assumption that these matters are not thought of or reflected on in the organisation as Bourgeon, (2005), Cadle and Yeates, (2004) and Ricciardi, (1999) refer to in the theoretical chapter. But as Melymuka (2004) stated there are other factors that are also beneficial to a project's success beside project team composition, such as, involved and motivated members. This was expressed as being the most important factor in this investigation by the respondents.

Melymuka (2004) states that team members that have worked together know how to communicate which reduces time and energy to build a project team. All three respondents commented that communication affects project work, even though the results state that they are experienced in working in a project environment. Could the amount of projects in the organisation contribute to or even influence experienced project members' abilities to communicate?

This investigation indicates that the staffing process of projects and team composition affects the projects outcome in quality, time and conflict. As Boddy (2002) and Rapp Ricciardi (2001) stated time, quality and cost affect one another. But as time, quality and cost are the causes there may be symptoms, such as, conflict that in the end affect more than the causes themselves. Could these symptoms be the outcome of an organisation overloaded with projects or responsibility issues?

Team composition of project X at 3P

The results from Belbin´s evaluation analysis of project X at 3P, showed that the team was not an optimal configuration, from a personality mix viewpoint, compared with research by Cadle et al (2004). Figure 14 indicated that this particular project had one personality role which dominated the project with 44 %. If this project is indicative of other parts of the organisation is hard to know. This is just an insight and snapshot of one project, this may or may not be the case in other projects. But if the organisation is interested in these issues they should re-evaluate and carry out a larger investigation using several projects to get a better outlook of the 3P situation. The insight that an organisation gets from doing an evaluation of their project teams is seen as a good indication of knowing the teams' strengths and weaknesses and therefore being able to react accordingly to improve or reinforce (Cadle et al, 2004). It is essential to know that this information should be used to avoid recruiting or promoting only people like oneself.
A thought that comes to mind while on this subject is; Does the mix of personalities in the project resemble the personalities recruited to a line position?

Human resource involvement in the areas above

For human resource management to work it needs to accomplish a process of maintaining current workforce data, the skills needed, the skills the companies has, then identify and fill any gaps that may exist, to be able to forecast future workforce needs and identify current talent gaps (Patterson, 2003; Saint-Onge,2001; Simmons, 2004). 3P had already begun a journey of collecting and re-evaluating present workforce data but as both theory and reality reveals it is not an easy task, it takes a lot of work and time to achieve.

The tool used for this work was a web program called Key Skills, developed by the human resource department. This program was new and had just been introduced to the organisation. The information provided would give the organisation an overall view of the present gaps and

improvement areas. The competence program reflected the strategy plan at 3P, which Simmons (2004) also referred to in the theoretical chapter. As Simmons (2004), Patterson (2003) and Saint-Onge (2001) stated the human resource department should have a more central part in learning and a competence development plan which, according to this investigation they do. In figure 17 the summary of the outcome from the author on the involvement of the human resource department is seen in the following three areas; project staffing process, competence area and team composition.

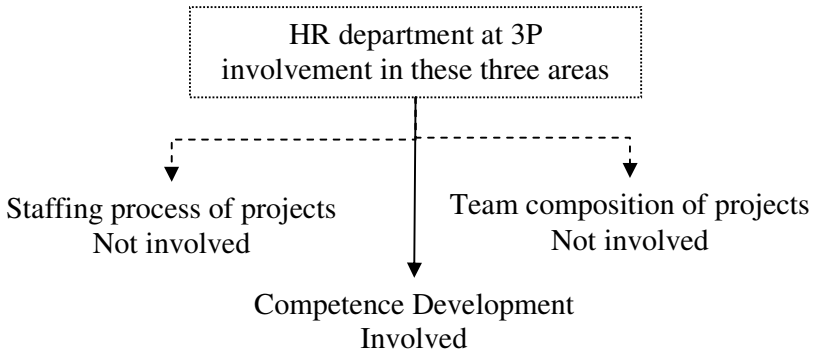


Figure 17. The author's view of the HR departments and involvement in staffing, competence development and team composition of projects at 3P

They should be more in demand and more valued states Saint-Onge (2001) but according to the data received this was not the case for two areas, see figure 17. The analysis based on work by Saint-Onge (2001) and Hafeez (2003) states that traditionally human resource departments have not worked in this area but as business changes this department should change with it. The old way of working is not an excuse for not being involved, this will not be beneficial for future development and the ability to compete on the market for that particular organisation.

Figure 7 shows the historical view of the way human resources works and the adaptability made is based on the changes on the market (Belbin, 2004). An analysis made indicates that 3P was in the industrial stage. There were no indications in this study that 3P was heading towards the post–industrial stage focusing on team role criteria and guidance methods. Even though the human resource respondents had stated that they should be more involved but that time and resources needed are lacking.

CONCLUSION

As organisations face new challenges due to environmental changes to a more multiple, flexible and complex work systems. These changes require more focus on the technical, procedural, organisational and human elements which have to be integrated (Ruuska et al, 2003). One conclusion that can be made is that 3P needs to further integrate the human resource department in the staffing processes and team compositions. This conclusion is based on the factors expressed in the previous chapter that team composition is noticeably affecting work in projects. To improve team composition one has to start with the staffing process and develop the dynamic environment that the projects need. This process should not only look for people available, experience or competence but also personalities that benefit team dynamics. The dynamics of a team could, in some cases, be more important than having the people with the right knowledge this is based on Belbin´s studies. To achieve this takes a committed and involved management with the support of the human resource department at 3P. They have to recognise these factors that are obviously affecting current work in their projects. This investigation enables the line mangers to evaluate and improve their staffing process and gives the project managers the opportunity to re-evaluate their situation. More involvement from the human resource department in project team composition will contribute to projects having a more positive outcome for time, cost and, as many stated, quality. The work done in this area will be beneficial from a strategic and transitional point of view.

Another conclusion became obvious. This was where the organisational structure played a central part in the project staffing process. The way they work projects today. The line managers are employers' outcome of the project.

Competence developments in 3P indicated good progress and awareness of its importance. Reflecting on the key elements for the staffing process, the respondents gave the following six subjects:

- Knowledge
- Ability to cooperate
- Ability to communicate
- Motivation
- Power of initiative
- Experience.

The overall investigation in this section indicates that people should be motivated and willing to work in projects. Why this issue receives more points than other issues may be related to the overload of projects in the organisation.
The human resource department has begun a long journey to chart the process of their current competences by using the Key Skills program. As described in the theoretical chapter, there are difficulties in achieving this in practice which is shown in this investigation case at 3P. The author would like to acknowledge 3P for their work in this area.

Another conclusion one can make is that the project management organisation is not strong and that issues are not thoroughly considered or clarified. To shift work at 3P to a more project organisation sets new demands on the organisation. More focus will be placed on the factors affecting the projects today. But there is a need for the organisational structure to change if this is going to work.

The respondents from the human resources are convinced that they could contribute and improve the project work at 3P. This could be achieved by starting with one case study at one specific project where a human resources person representative is involved from the start to the end finish. Evaluate and see the effect areas in which that they could support and how they could contribute to the project work. With the knowledge from the case study they can construct a structure that fits the 3P organisation and systems.

The business is changing and that requires that the role of human resources in staffing to change with it. Even though the organisation at 3P has not traditionally worked with this there is no excuse not to try to improve and contribute to the development that they obviously need. By looking at project changes throughout history and projects today, they are constantly changing and this is something that all organisations now have and work with. Should not our view on this also change?

I believe that 3P has enormous potential to improve the factors mentioned in this thesis and continue to develop with the changes that the business environments require of them.

Future research

For those who are interested in continuing with research in this area, I would like to recommend carrying out a larger investigation of several projects. Another would be to concentrate the investigation on consultants. This has not been reviewed or examined in this thesis. Another interesting area would be to investigate the project management organisation only.

APPENDIX 1

Human resource interview form on staffing process, competence and team composition

1. Background
   a) How long have you been working in the Human Resource Management group?
   b) What is you present working position within human resource department?

2. Staffing process at 3P
   a) Could you describe the present method at 3P regarding the staffing projects?
   b) What are the advantages /disadvantages in your opinion of this present method?
   c) Do you think the staffing process could be improved? If yes, how?
   d) Have you evaluated the present staffing method? Considered revising it?
   e) How is the final decision maker in the staffing process? Why?
   f) Do you consider that you have the resources and time to be involved in this process?
   g) Do you consider that you should be involved in this process?
   h) Is there any need to change/evolve the project staffing process?
   i) Do you consider that you have the competence present today to be involved in this process today?

3. Competence part
   a) How are you working with competence development at 3P?
   b) Are you using computer programs to evaluate and know what competences you have?
   c) What do you consider to be advantages /disadvantages with your present program?
   d) How do you feel that this is progressing in the organization?

4. Team composition
   a) Are you from human resources involved in team compositions in the organization?
   b) What about team composition of project teams?
   c) What could you contribute with in this area?
   d) Do you know what affects the projects the most?

APPENDIX 2

Research Questionnaire for the Project managers, Line managers and Project members at 3P – AB Volvo, 2006

1. General information

1.1 What position do you have?

A. Project Manager B. Project Member C. Line Manager

1.2 Gender Male Female

1.3 Age →24 25-35 36-45 46-55 56→

1.4 How many years have you worked in projects?

A. Not at all B. <1 year C.1-3 year
D. 4-5 years E. 6 years→ F. Others_____

2. Staffing process/method

In this part of the questionnaire are questions that are directed to one or several respondents. At the end of each question the respondents are stated that should answer the question.

2.1 How long ago did you participate in a project staffing process/method?
(Project member, Project Manager, Line Manager)

A. Not at all B. <6 months C.6 months -11 months
D. 1-2 years E.2>years F. Others_____

2.2 How many years have you worked with the staffing process/method of projects?
(Line Managers, Project Managers)

A. Not at all B. <1 year C.1-3 year
D. 4-5 years E. 6 years→ F. Others_____

2.3 Do project members have to apply to the projects?
(Project Members, Line Managers, Project Managers)

A. Yes B. No
C. I was personally contacted D. Other_____

2.4 What channels have you been in contact/ used for the applying for the post in project/projects? *(Project Members)*

A. Externally B. Internally
C. Personal contact network D. Other_____

2.5 Do you conduct personality evaluation tests in the staffing process/method for a position in a project?
(Project Members)

A. Yes B. No
C. Do not know D. Other_____

2.6 Do you know if a computer program is used which helps at the project staffing process/method occasion? *(Project Members, Line Managers, Project Managers)*

A. Yes B. No
C. Do not know D. Other_____

2.7 If, yes at question 2.6, do know if your personal data (education, experience, and so on) are stated in a computer program that can help the human resource in their project staffing/method process?
(Project Members, Line Managers, Project Managers)
A. Yes B. No
C. Do not know D. Others _____

2.8 Do you conduct in-house project staffing process/method the same way as the external project staffing process/method? *(Project Members, Line Managers, Project Managers)*
A. Yes B. No
C. Do not know D. Other_____

2.9 If, no at question 2.8, what is the difference between these two approaches of the project staffing process/method? *(Project Members, Line Managers, Project Managers)*

_____

2.10 At the in-house project staffing occasion is the Human Resource representative present?
(Project Members, Line Managers, Project Managers)
A. Yes B. No
C. Do not know D. Other_____

2.11 At the external project staffing occasion is the Human Resource representative present?
(Project Members, Line Managers, Project Managers)
A. Yes B. No
C. Do not know D. Other_____

2.12 What do you consider the key elements are in the staffing process/method of selecting the members for a project? (Choose the key element most important to you - max 5)
(Project Members, Line Managers, Project Managers)
A. Knowledge B. Social Competence
C. Ability to cooperate D. Ability to communicate
E. Experienced F. Commitment
G. Personality H. Motivation
I. Independence J. Positive
K. Structuring L. Power of initiative
M. Honesty N. Creativity
O. Flexibility P. Efficiency
Q. Availability R. Values
S. Personal network T. Other_____

2.13 Can you pinpoint the persons present at the staffing occasion for projects?
(Project Members, Line Managers, Project Managers)
A. Project Manager B. Human resource department
C. Line Managers D. Others _____

2.14 How has the main decision regarding which person should enter a project in the staffing process/method? *(Project Members, Line Managers, Project Managers)*
A. Project Manager B. Human resource department
C. Line Managers D. Others _____

3. Competence, Collaboration, Effectiveness

3.1 What educational background do you have?
A. Elementary school B Senior high school C. Bachelor's degree
D. Master's degree E. Project management degree F. Others_____

3.2 Is it important with theoretical knowledge in project members?
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly Disagree

3.3 Is it important that project members have social competence in the present product development projects?
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly Disagree

3.4 Is it important for project members to have practical knowledge?
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly Disagree

3.5 Experienced is important aspect of a person at the staffing occasion?
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E. Strongly Disagree

3.6 Do the team members have knowledge to use the tools in a project to accomplish their job?
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E .Strongly Disagree

3.7 How are the values in the project regarding the willingness and motivation to do things?
A. Strongly agree B. Agree C. Neither agree nor disagree D. Disagree E .Strongly Disagree

Collaboration in the project team

3.8 Is your apprehension that project team composition affects the working climate in the project?
A. Yes B. No
C. Do not know D. Other_____

3.9 Do you have enough time to get to know one another in the projects?
A. Yes B. No
C. Do not know D. Other_____

3.10 Have you developed good collaboration in the project teams?
A. Yes B. No
C. Do not know D. Other_____

3. 11 In what areas do you consider that the project teams are not working that affect the projects outcome? Brief explanation

Efficiency and effectiveness

3.12 Do you work efficiently (doing things right) in projects?
A. Yes B. No
C. Do not know D. Other_____

3.13 Do you work effectively (doing right things) in projects?
A. Yes B. No
C. Do not know D. Other_____

3.14 Do you believe that there is a correlation between the present staffing process/method and team-composition which may affect the projects work in time?
A. Yes B. No
C. Do not know D. Other_____

3.15 Do you believe that there is a correlation between the present staffing process/method and team-composition which may affect the projects cost?
A. Yes B. No
C. Do not know D. Other_____

3.16 Do you believe that there is a correlation between the present staffing process/method and team-composition which may affect the projects quality?
A. Yes B. No
C. Do not know D. Other_____

3.17 Do you believe that there is a correlation between staffing process/method and team composition and the level of conflicts in the project team?
A. Yes B. No
C. Do not know D. Other_____

3.18 Do you believe that there is a correlation between staffing and team composition and the level of turnover of the project members?
A. Yes B. No
C. Do not know D. Other_____

Team compositions see Belbin (1981; 197-201)

Only the project members

APPENDIX 3

Research Questionnaire for the Project managers, Line managers and Project members at 3P –Volvo AB, 2006

1. Allmän information

1.1 Vad är din nuvarande arbetsuppgift?
A. Projektledare. B. Projektmedarbetare. C. Linje Chef

1.2 Kön Man Kvinna

1.3 Ålder →24 25-35 36-45 46-55 56→

1.4 Hur många år har du jobbat i projekt?
A. Inga B.>1 år C.1-3 år
D. 4-5 år. E. 6 år→. F. Annat_____

2. Bemannings process/metod

I denna del av enkäten är uppdelad på flera olika frågor som riktar sig till en eller flera respondenter. Vid varje fråga så finns de respondenter inom parantes som ska svara på denna fråga.

2.1 Hur länge sedan deltog du in en bemanningsprocess inför ett projekt?
(Projektmedarbetare, Linje chef, Projektledare)
A. Inte deltagit B.>6 månader C.6 månader -11 månader
D. 1-2 år. E.2> år. F. Annat_____

2.2 Hur många år har du jobbat med bemanningen av projekt?
(Linje chef, Projektledare)
A. Inte deltagit B.>1 år C.1-3 år
D. 4-5 år. E. 6 år→. F. Annat_____

2.3 Behövde projektmedarbetarna ansöka till projekten?
(Projektmedarbetare, Linje chef, Projektledare)
A. Ja. B. Nej
C. Vet inte D. Annat_____

2.4 Vilka kanaler har du varit i kontakt/använt för att ansöka till projektet?
(Projektmedarbetare)
A Externa. B. Intern
C. Personliga kontaktnät G. Annat_____

2.5 Utför du några personlighetsanalyser under bemanningsprocess för en tjänst i ett projekt?
(Projektmedarbetare)
A. Ja. B. Nej
C. Vet inte D. Annat_____

2.6 Vet du om det finns dator program som hjälper till i bemanningsprocessen?
(Projektmedarbetare, Linje chef, Projektledare)
A. Ja. B. Nej
C. Vet inte D. Annat_____

2.7 Ifall du har svarat ja på frågan 2.6, vet du om dina data (Utbildning, erfarenhet, med mera) är sparad i systemet för att kunna bidra med kunskap och underlätta bemanningsprocessen för projekt?*(Projektmedarbetare, Linje chef, Projektledare)*

A. Ja. B. Nej
C. Vet inte. D. Annat_____

2.8 Anser du att man utför samma bemanningsprocess internt som vid externa bemanningstillfällen?*(Projektmedarbetare, Linje chef, Projektledare)*

A. Ja. B. Nej
C. Vet inte. D. Annat_____

2.9 Ifall du har svarat nej på frågan 2.8, vad är det som skiljer de två tillvägagångssätten från varandra? Förklara kortfattat.*(Projektmedarbetare, Linje chef, Projektledare)*

_____

2.10 Vid interna bemanningstillfällen är representanter från HR närvarande? *(Projektmedarbetare, Linje chef, Projektledare)*

A. Ja.. B. Nej
C. Vet inte D. Annat_____

2.11 Vid externa bemanningstillfällen är representanter från HR närvarande? *(Projektmedarbetare, Linje chef, Projektledare)*

A. Ja. B. Nej
C. Vet inte D. Annat_____

2.12 Vilka faktorer anser du vara de viktigaste i en bemanningsprocess för projektet? Välj de du uppfattar som viktigast max 5 punkter.*(Projektmedarbetare, Linje chef, Projektledare)*

A**.** Kunskap. B. Social kompetens
C. Förmågan att samarbeta D. Förmågan att kommunicera
E. Erfarenhet. F. Åtagande
G. Personlighet. H. Motivation
I. Självständighet . J. Positiv
K. Strukturerad. L. Förmågan att handla
M. Ärlighet. N. Kreativitet
O. Flexibilitet. P. Effektivitet
Q. Tillgänglighet. R. Värderingar
S. Kontaktnät T. Annat_____

2.13 Kan du specificera vilka är närvarande vid ett bemannings möte av ett projekt? *(Projektmedarbetare, Linje chef, Projektledare)*

A. Projekt Manager B. Human Resource ansvarig
C. Linje Managers D. Andra _____

2.14 Vem är den slutgiltiga beslutsfattaren avseende vilken person som ska in och jobba i ett projekt under bemanningsprocessen? *(Projektmedarbetare, Linje chef, Projektledare)*

A. Projekt ledare B. Human Resource ansvarig
C. Linje Chefer D. Andra _____

3. Kompetens, Samarbete, Effektivitet

I denna del ska alla respondenter svara på frågorna. Ange i vilken utsträckning Du instämmer med följande påståenden.

Kompetens

3.1 Vilken utbildning har du?

A. Grundskolan B Gymnasiet C. Universitet/Högskolan 120p≥
D. Universitet/Högskolan <120p E. Projekt lednings utbildning F. Annat_____

3.2 Det är viktigt med teoretisk kunskap hos projekt medlemmarna?

A. Instämmer starkt B. Instämmer C. Varken Eller D. Instämmer ej E. Starkt icke instämmande

3.3 Det är viktigt att projekt medlemmarna som ingår i det aktuella produktutvecklingsprojektet har hög grad av social kompetens?

A. Instämmer starkt B. Instämmer C. Varken Eller D. Instämmer ej E. Starkt icke instämmande

3.4 Det är viktigt med praktiska kunskaper?

A. Instämmer starkt B. Instämmer C. Varken Eller D. Instämmer ej E. Starkt icke instämmande

3.5 Erfarenhet är en viktig faktor vid val av person i ett bemanningstillfälle?

A. Instämmer starkt B. Instämmer C. Varken Eller D. Instämmer ej E. Starkt icke instämmande

3.6 Projekt medlemmarna har kunskap om de verktyg som behövs för att kunna utföra sitt jobb i projektet?

A. Instämmer starkt B. Instämmer C. Varken Eller D. Instämmer ej E. Starkt icke instämmande

3.7 Viljan och motivationen finns för att utföra saker i projektet?

A. Instämmer starkt B. Instämmer C. Varken Eller D. Instämmer ej E. Starkt icke instämmande

Samarbetet inom projekt teamet

3.8 Uppfattar du att projekt teamets sammansättning påverkar arbetsklimat i projektet?

A. Ja. B. Nej
C. Vet inte D. Annat_____

3.9 Har ni tillräckligt med tid för att lära känna varandra inom projekt teamet?

A. Ja . B. Nej
C. Vet inte D. Annat_____

3.10 Har ni utvecklat goda samarbetsrelationer inom projekt teamet?

A. Ja B. Nej
C. Vet inte D. Annat_____

3.11 Inom vilket område anser ni att projekt teamets har sina brister som påverkat utfallet av projektet? Förklara kortfattat

_____

Effektivitet och Produktivt

3.12 Jobbar ni produktivt (göra saker rätt) i projektet?

A. Ja B. Nej
C. Vet inte D. Annat_____

3.13 Jobbar ni effektivt (göra rätt saker) i projektet?
A. Ja B. Nej
C. Vet inte D. Annat_____

3.14 Anser du att det finns ett samband mellan den rådande bemanningsprocessens utformning och team sammansättningen vilket påverkar projektets utfall i tid?
A. Ja B. Nej
C. Vet inte D. Annat_____

3.15 Anser du att det finns ett samband mellan den rådande bemanningsprocessens utformning och team sammansättningen vilket påverkar projektets utfall i kostnad?
A. Ja B. Nej
C. Vet inte D. Annat_____

3.16 Anser du att det finns ett samband mellan den rådande bemanningsprocessens utformning och team sammansättningen vilket påverkar projektets utfall i kvalitet?
A. Ja B. Nej
C. Vet inte D. Annat_____

3.17 Anser du att det finns ett samband mellan bemanningsprocessen och team sammansättningen som påverkar konflikterna inom projekt?
A. Ja B. Nej
C. Vet inte D. Annat_____

3.18 Anser du att det finns ett samband mellan bemanningsprocessen och team sammansättningen och omsättningen av projekt medlemmar?
A. Ja B. Nej
C. Vet inte D. Annat_____

---

4. Team roller se Belbin (1981; 197-210)
Enbart för projekt medarbetare

APPENDIX 4

Result from the SPSS cross tabulation with the questions

Table 1. Cross tabulation between Question 1.1 and Question 1.2

		Gender		Total
		Man	Woman	
Work position	Project Manager	13	3	16
	Project member in Project X	14	2	16
	Line Manager	8	4	12
Total		35	9	44

Table 2. Cross tabulation between Question 1.1 and Question 1.3

		Age					Total
		<24	25-35	36-45	46-55	56>	
Work position	Project Manager	0	6	5	5	0	16
	Project member in Project X	1	5	5	4	1	16
	Line Manager	0	1	9	2	0	12
Total		1	12	19	11	1	44

Table 3. Question 1.3 Age histogram

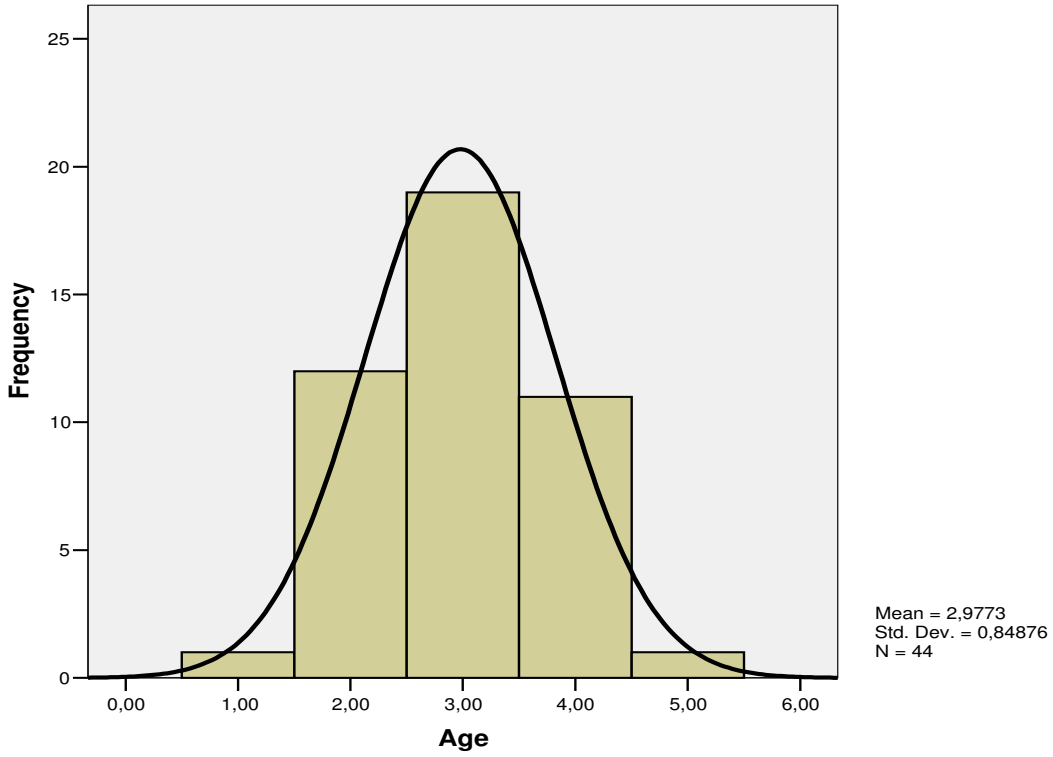


Table 4. Cross tabulation between Question 1.1 and Question 1.4

		Years in projects						Total
		Not at all	<1years	1-3 years	4-5 years	6 years >	Others	
Working position	Project Manager	0	1	4	3	7	1	16
	Project member in Project X	1	3	2	3	7	0	16
	Line Manager	0	0	1	3	8	0	12
Total		**1**	**4**	**7**	**9**	**22**	**1**	**44**

Table 5. Cross tabulation between Question 1.1 and Question 2.1

		Participate in projects Q2.1						Total
		Not at all	<6 months	6-11 months	1-2 years	>2 years	Other	
Work position	Project Manager	4	5	1	2	2	2	16
	Project member in Project X	12	0	0	2	2	0	16
	Line Manager	2	5	5	0	0	0	12
Total		**18**	**10**	**6**	**4**	**4**	**2**	**44**

Table 6. Cross tabulation between Question 1.1 and Question 2.2

		How many years staffing Q2.2						Total
		Not at all	<1 year	1-3 year	4-5 year	6 year>	Do not need to answer	
Work position	Project Manager	4	3	2	2	5	0	16
	Project member in Project X	0	0	0	0	0	16	16
	Line Manager	1	1	1	6	3	0	12
Total		**5**	**4**	**3**	**8**	**8**	**16**	**44**

Table 7. Cross tabulation between Question 1.1 and Question 2.3

		Apply for projects Q2.3			Total
		No	Do not know	Other	
Work position	Project Manager	14	2	0	16
	Project member in Project X	9	6	1	16
	Line Manager	7	0	5	12
Total		**30**	**8**	**6**	**44**

Table 8. Cross tabulation between Question 1.1 and Question 2.4

		Channels_used_2.4				Total
		Internally	Personal contact network	Other	Do not need to answer	
Work position	Project Manager	0	0	0	16	16
	Project member in Project X	6	1	9	0	16
	Line Manager	0	0	0	12	12
Total		**6**	**1**	**9**	**28**	**44**

Table 9. Cross tabulation between Question 1.1 and Question 2.5

		Personality evaluation tests Q2.5				Total
		No	Do not know	Other	Do not need to answer	
Work position	Project Manager	0	0	0	16	16
	Project member in Project X	12	3	1	0	16
	Line Manager	0	0	0	12	12
Total		**12**	**3**	**1**	**28**	**44**

Table 10. Cross tabulation between Question 1.1 and Question 2.6

		Computer program Q2.6			Total
		Yes	No	Do not know	
Work position	Project Manager	1	8	7	16
	Project member in Project X	1	3	12	16
	Line Manager	2	8	2	12
Total		**4**	**19**	**21**	**44**

Table 11. Cross tabulation between Question 1.1 and Question 2.7

		Your personal data Q2.7				Total
		Yes	No	Do not know	Do not have to answer	
Work position	Project Manager	0	1	1	14	16
	Project member in Project X	0	0	2	14	16
	Line Manager	1	1	0	10	12
Total		**1**	**2**	**3**	**38**	**44**

Table 12. Cross tabulation between Question 1.1 and Question 2.8

		Internal external staffing process Q2.8				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	2	10	4	0	16
	Project member in Project X	2	4	10	0	16
	Line Manager	2	6	1	3	12
Total		**6**	**20**	**15**	**3**	**44**

Table 13. Cross tabulation between Question 1.1 and Question 2.9

		Elucidate2.8_2.9		Total
		No Words	Words	
Work position	Project Manager	7	9	16
	Project member in Project X	4	12	16
	Line Manager	8	4	12
Total		**19**	**25**	**44**

Table 14. Cross tabulation between Question 1.1 and Question 2.10

		Internal staffing process HR Q2.10				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	1	11	3	1	16
	Project member in Project X	1	7	8	0	16
	Line Manager	1	8	1	2	12
Total		**3**	**26**	**12**	**3**	**44**

Table 15. Cross tabulation between Question 1.1 and Question 2.11

		External staffing process HR Q2.11				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	5	4	7	0	16
	Project member in Project X	2	3	10	1	16
	Line Manager	7	3	1	1	12
Total		**14**	**10**	**18**	**2**	**44**

Table 16. Cross tabulation between Question 1.1 and Question 2.13

		Persons present at staffing occasion Q2.13					Total
		Project Manager	Line Manager	Other	Project Manager / Line Manager	Project Manager/Line Manager/Human R	
Work position	Project Manager	0	6	2	7	0	15
	Project member in Project X	3	3	5	4	1	16
	Line Manager	0	4	3	5	0	12
Total		**3**	**13**	**10**	**16**	**1**	**43**

Table 17. Cross tabulation between Question 1.1 and Question 2.14

		Main decision taker Q2.14				Total
		Project Manager	Line Manager	Other	Project Manager/Line Manager	
Work position	Project Manager	1	15	0	0	16
	Project member in Project X	3	8	4	1	16
	Line Manager	0	8	1	3	12
Total		**4**	**31**	**5**	**4**	**44**

Table 18. Cross tabulation between Question 1.1 and Question 3.2

		Theoretical knowledge Q3.2			
		Strongly agree	Agree	Neither agree nor disagree	Total
Work position	Project Manager	2	9	5	16
	Project member in Project X	0	9	7	16
	Line Manager	0	9	3	12
Total		2	27	15	44

Table 19. Cross tabulation between Question 1.1 and Question 3.3

		Social competence Q3.3			
		Strongly agree	Agree	Neither agree nor disagree	Total
Work position	Project Manager	2	11	3	16
	Project member in Project X	2	9	5	16
	Line Manager	2	4	6	12
Total		6	24	14	44

Table 20. Cross tabulation between Question 1.1 and Question 3.4

		Practical knowledge Q3.4			
		Strongly agree	Agree	Neither agree nor disagree	Total
Work position	Project Manager	3	7	6	16
	Project member in Project X	0	12	4	16
	Line Manager	2	6	4	12
Total		**5**	**25**	**14**	**44**

Table 21. Cross tabulation between Question 1.1 and Question 3.5

		Experience important aspect Q3.5			
		Strongly agree	Agree	Neither agree nor disagree	Total
Work position	Project Manager	3	9	4	16
	Project member in Project X	3	11	2	16
	Line Manager	6	5	1	12
Total		**12**	**25**	**7**	**44**

Table 22. Cross tabulation between Question 1.1 and Question 3.6

		Knowledge to use tools Q3.6				
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Total
Work position	Project Manager	4	8	1	3	16
	Project member in Project X	5	10	1	0	16
	Line Manager	4	8	0	0	12
Total		**13**	**26**	**2**	**3**	**44**

Table 23. Cross tabulation between Question 1.1 and Question 3.7

		Willingness Motivation Q3.7				
		Strongly agree	Agree	Neither agree nor disagree	Disagree	Total
Work position	Project Manager	8	6	1	1	16
	Project member in Project X	8	7	1	0	16
	Line Manager	9	3	0	0	12
Total		**25**	**16**	**2**	**1**	**44**

Table 24. Cross tabulation between Question 1.1 and Question 3.8

		Team composition affects working climate Q3.8		
		Yes	Do not know	Total
Work position	Project Manager	16	0	16
	Project member in Project X	16	0	16
	Line Manager	11	1	12
Total		**43**	**1**	**44**

Table 25. Cross tabulation between Question 1.1 and Question 3.9

		Enough time to get to know Q3.9				
		Yes	No	Do not know	Other	Total
Work position	Project Manager	4	10	0	2	16
	Project member in Project X	2	9	3	2	16
	Line Manager	8	1	3	0	12
Total		**14**	**20**	**6**	**4**	**44**

Table 26. Cross tabulation between Question 1.1 and Question 3.10

		Developed good collaboration Q3.10				
		Yes	No	Do not know	Other	Total
Work position	Project Manager	8	3	1	4	16
	Project member in Project X	12	0	1	3	16
	Line Manager	3	0	7	2	12
Total		**23**	**3**	**9**	**9**	**44**

Table 27. Cross tabulation between Question 1.1 and Question 3.11

		What areas Q3.11		
		No words	Words	Total
Work position	Project Manager	6	10	16
	Project member in Project X	7	9	16
	Line Manager	8	4	12
Total		**21**	**23**	**44**

Table 28. Cross tabulation between Question 1.1 and Question 3.12

		Work efficiently Q3.12				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	7	3	0	6	16
	Project member in Project X	8	0	2	6	16
	Line Manager	6	1	2	3	12
Total		**21**	**4**	**4**	**15**	**44**

Table 29. Cross tabulation between Question 1.1 and Question 3.13

		Work effectively Q3.13				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	4	6	0	6	16
	Project member in Project X	10	0	2	4	16
	Line Manager	4	3	4	1	12
Total		**18**	**9**	**6**	**11**	**44**

Table 30. Cross tabulation between Question 1.1 and Question 3.14

		Correlation between outcome in time Q3.14				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	13	1	2	0	16
	Project member in Project X	4	4	7	1	16
	Line Manager	4	2	4	2	12
Total		**21**	**7**	**13**	**3**	**44**

Table 31. Cross tabulation between Question 1.1 and Question 3.15

		Correlation between outcome in cost 3.15				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	10	3	3	0	16
	Project member in Project X	5	4	7	0	16
	Line Manager	2	4	4	2	12
Total		**17**	**11**	**14**	**2**	**44**

Table 32. Cross tabulation between Question 1.1 and Question 3.16

		Correlation between outcome in quality 3.16				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	13	2	1	0	16
	Project member in Project X	6	3	7	0	16
	Line Manager	4	3	3	2	12
Total		**23**	**8**	**11**	**2**	**44**

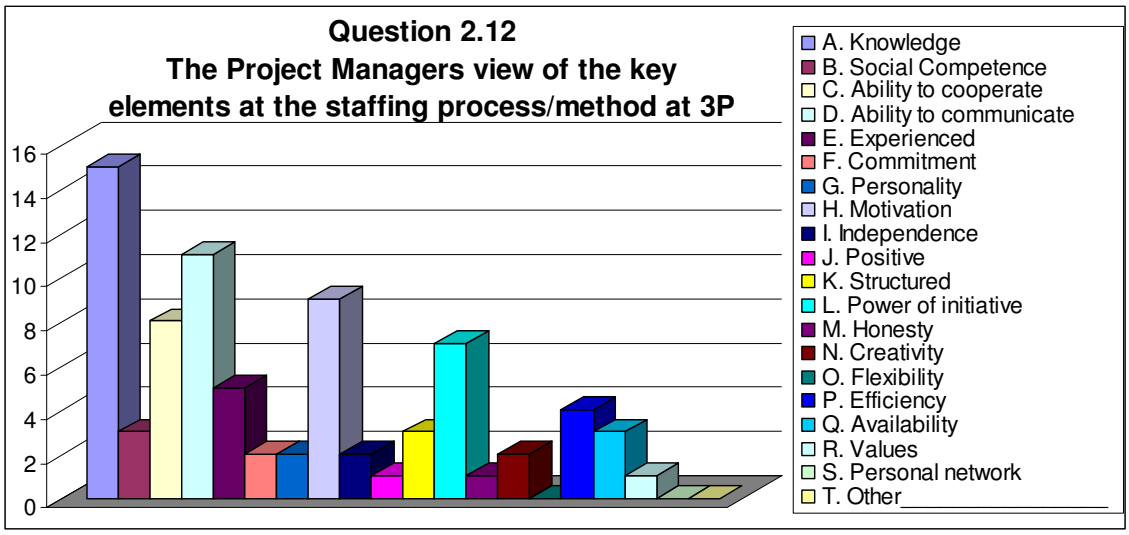
Table 33. Cross tabulation between Question 1.1 and Question 3.17

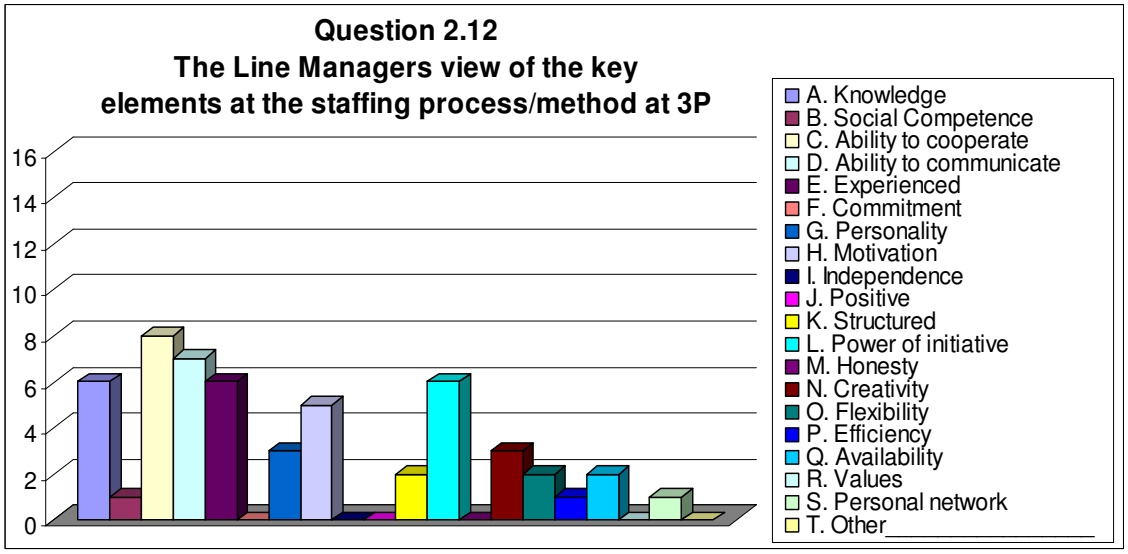
		Correlation between level of conflicts 3.17				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	10	3	3	0	16
	Project member in Project X	5	2	9	0	16
	Line Manager	4	3	3	2	12
Total		**19**	**8**	**15**	**2**	**44**

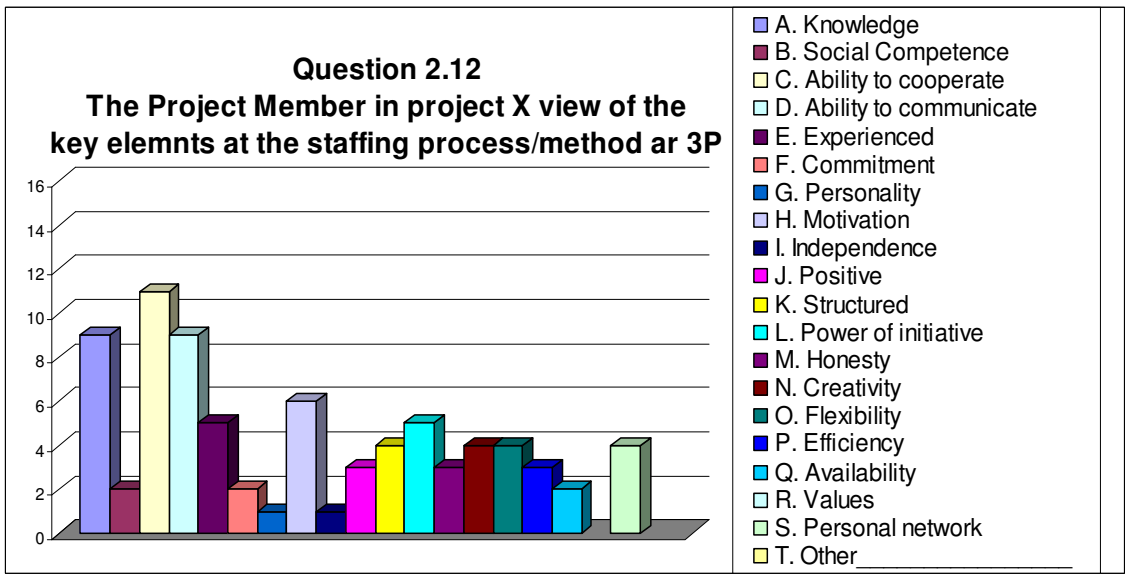
Table 34. Cross tabulation between Question 1.1 and Question 3.18

		Correlation between level of turnover 3.18				Total
		Yes	No	Do not know	Other	
Work position	Project Manager	8	7	1	0	16
	Project member in Project X	6	3	7	0	16
	Line Manager	2	4	5	1	12
Total		**16**	**14**	**13**	**1**	**44**

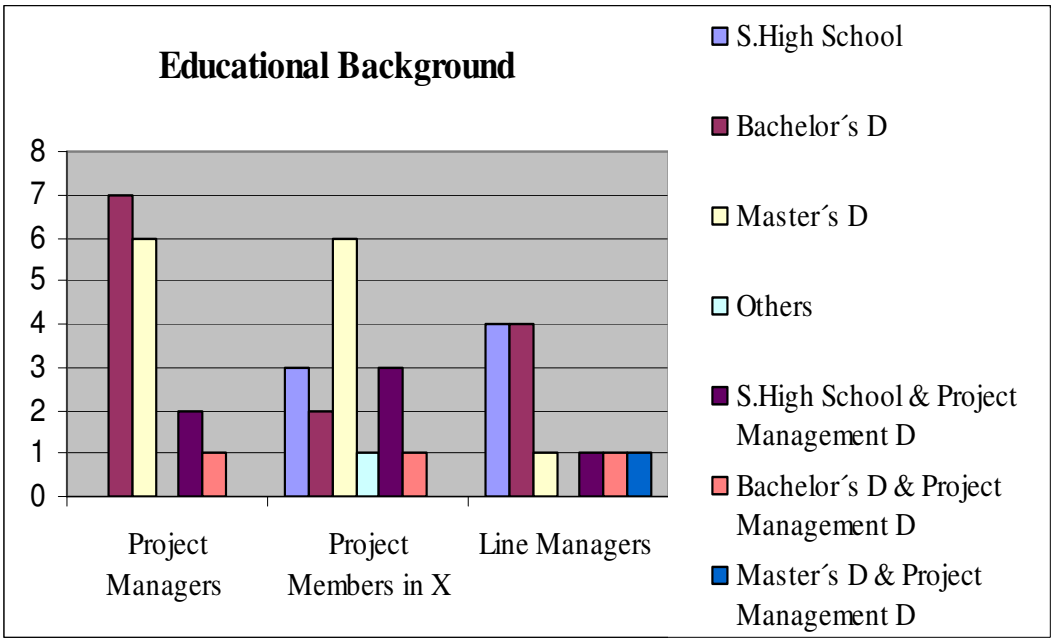
APPENDIX 5 Question 2.12 tables







APPENDIX 6 Question 3.1



REFERENCES

Antoni, M., 2003, Learning Between Projects – in Product Development Contexts, Linköping Studies in Science and Technology, Dissertation No. 825, Linköping University, Sweden.

Archibald, RD, 1992, Managing high-technology programs and projects, 2nd edition, John Wiley& Sons Inc,

Badawy, M, 1988, "What we've learned; managing human resources", *Research Technology Management, pg, 19*

Belbin, M, 1993, Management Teams - Så skapas framgångsrika team, IHM förlag, Göteborg,

Belbin, M, 2004, Team roller i praktiken, IHM förlag, Göteborg,

Boddy, D, 2002, Managing Projects; Building and leading the team, Pearson Education Limited, Prentice Hall International, UK

Bontis, N., 2003, "HR´s role in knowledge management", *Canadian HR Report*, Toronto Vol.16, Iss 5

Bruzelius, L. H., Skärvad P-H., 2000, Integrerad organisationslära, Studentlitteratur, Åttonde upplagan, Lund, Sverige

Bourgeon L, 2005, http://www.ofenhandwerk.com/oklc/pdf_files/G-1_bourgeon.pdf (Accessed: 5 April)

Cadle J, Yeates D, 2004, Project management for information systems, Pearson Education Limited, 4th edition

Davenport T. H., De Long D. W., Beers M. C., 1998,"Successful Knowledge Management Projects", *Sloan Management Review*, pg. 43-57

Davenport T, 1999, "Human capital- what it is and why people invest it", The Jossey-Bass Business &Management Series, first edition, San Francisco

Engle, P, 2005,"The project management office", *Industrial Engineer*, Vol.37 pg. 20

Frame Davidson, J, 1999, Project Management Competence – Building Key Skills for individuals teams, and organizations, Jossey-Bass Publishers, San Francisco

Hafeez, K., and Abdelmeguid, H., 2003, "Dynamics of Human resource and knowledge management", *Journal of the Operational Research Society*, pg.153-164

Hartman J, 2004, "Vetenskapligt tänkande –från kunskapsteori till metodteori", Studentlitteratur, Lund

Jacobsen, D. I., 2002, Vad, hur och varför?, Studentlitteratur, Lund

Jones, J, 2000, "When "X" equals staff", *InfoWorld*, pg. 36

Lindkvist, B., 2001, "Kunskapsöverföring mellan produktutvecklingsprojekt", *The Economic Research Institutet Stockholm School of Economics*, Stockholm

Macheridis, N, 2005, Projektaspekter – Kunskapsområden för ledning och styrning av projekt, Studentlitteratur, Andra upplagan, Lund

Marttala, A, and Karlsson, Å, 1999, "Projektboken – metod och styrning för lyckade projekt", Studentlitteratur, Lund

Melymuka, K, 2004, "How to pick a project team", *Computerworld,* Apr 12, pg. 36

Messmer, M, 2003, "Achieving appropriate staffing levels", *Strategic Finance,* pg. 15

Messmer, M, 1990, "Strategic Staffing for the `90s", *Personnel Journal*, 69, 10, pg. 92

Newman, B, 2000, "Knowledge Management for Project Managers- Applying Transformational Knowledge Management to improve project performance", *MK Forum*, pg. 1-4

Patterson B., and Lindsey S., 2003, "Weighing resources", *Human resource management Magazine,* Vol.48, Iss 10, pg. 103

Porter, M E, 1980, Competitive Strategy Techniques for analysing industries and competitors, The Free Press Edition, New York

Roth, J., 2002, Knowledge Unplugged - An action research approach to enhancing knowing in R&D organizations, *Department of Project Management Fenix Research Program*, Chalmers University, Gothenburg, Sweden.

Roth, L G., and Senge, M P., 1996, "From theory to practice; research territory, processes and structure at an organizational learning center", *Journal of Organisational Change Management*, Vol 9 pg 92-106

Ruuska, I and Vartiainen, M, 2003, "Critical project competences- a case study", *Journal of Workplace Learning*, Vol 15, pg. 307-312

Saint-Onge H, 2001, "Strategic Capabilities Shaping Human Resource Management within the Knowledge-Driven Enterprise" available at; http--www_konvergeandknow_com-images-Image5_gif-filer\strategic.htm, (Accessed 30 March 2005 at 11.00)

Schafer M, 2004, "Why workforce management is back in style", *Optimize*, Manhasset, pg. 67

Simmons, J, 2004, "Streamlining HR: Integrated staff planning puts the final piece into the strategic plan", *CMA Management Hamilton*, Vol 77, Iss. 8, pg.12

Spira, JB, 2005, "In praise of knowledge workers", *KM world*, Vol. 14, Iss 2, pg. 1

Österlund, J, 1999, "Providing Competence to the product development project: A conflict between fragmentary learning and Holistic Use", *System Research and Behavioral Science*, 16, pg. 41