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Jakub Smoleň

**A THOROUGH COMPARISON BETWEEN SKANSKA AND A MIDDLE-
SIZED COMPANY**

**PODROBNÉ POROVNANIE FIRMY SKANSKA SO STREDNE
VEĽKOU STAVEBNOU FIRMOU**

Statutory declaration

I hereby declare that the bachelor's thesis entitled "A thorough comparison between Skanska and a middle-sized company" submitted to Czech Technical University in Prague was written by myself under the guidance of Ing. Martin Čásenský, CSc. I have stated all the resources used to elaborate this thesis in conformity with the Methodical guide for ethical development of university final thesis.

Prague, 25th May 2018

Jakub Smoleň

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Abstract

This bachelor's thesis focuses on a managerial, organizational and financial comparison between Skanska and a selected middle-sized company. Information in this thesis is described according to professional literature. This bachelor's thesis comes with a restructured operation manual oriented on a middle-sized company. At the end of the bachelor's thesis all of the information is summarized, and all of the findings are evaluated.

Abstrakt

Táto bakalárska práca sa zaoberá manažérskym, organizačným a finančným porovnaním firmy Skanska a vybranej stredne veľkej firmy. Informácie v tejto práci sú popisované podľa odborných zdrojov. Táto bakalárska práca prináša obmenený operačný manuál zameraný na stredne veľkú stavebnú firmu. V závere tejto práce sú všetky nájdené informácie zhrnuté a všetky zistenia vyhodnotené.

Key words: organization, Skanska, company, management, middle-sized, value, employee, talent, optimization, standardization, process, performance, quality, estimate, measure, structure, implication, department, investor, contractor, implementation, business, tender, cost

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1. Introduction

All through the collective history of humanity, people with similar interests and needs have been gathering into groups to achieve a common goal. The common goal, whether it be survival, food gathering or construction of shelter, always had its inner attributes. The attributes being: the definition of objectives, limitation in time, limitation in resources, and a well-defined separation from other goals. The uniqueness of these similarities has endured throughout millennia into present time. In order to fulfill all of beforementioned expectations and to produce profit, people created organizations with their own coordination processes and management hierarchies. We see plentiful organizations and companies in the field of civil engineering. On one hand we see a multinational, publicly traded construction and development company such as Skanska. On the other hand, we observe a small to medium sized, mainly as a subcontractor operating company in the Czech Republic.

The aim of this work is to describe various standpoints from which a company can be evaluated and then applying these onto the two chosen companies. Moreover, to offer a solution to some of the challenges these companies have to face in today's world. A restructured operation manual for a middle-sized company should be introduced at the end of the thesis.

In no way should this work serve as an advertisement to these companies. Furthermore, this work should not present any of the studied objects in a negative nor positive manner. This work is meant to be an informative guide into internal processes inside of a company in an effort to maximize the profit and fulfill all of the expectations of stakeholders. Nonpartisanship of this work will also be supported by the decision not to make any names of companies, other than Skanska, public.

2. Overview

Characterizing the nature of the two observed companies is a crucial point in further comparison.

2.1. Skanska

2.1.1. Skanska international

Skanska AB is an international construction company based in Stockholm, Sweden. According to *Construction global* it is the fifth largest construction company in the world employing around 40 000 employees worldwide [3]. It achieved a revenue of approximately 362 billion Czech Crowns worldwide in the year 2016 [4]. Besides Czech Republic, Skanska operates in the whole Nordic region of Europe as well as Central and Southeastern Europe (Slovakia, Poland, Hungary, Romania). The main competitors in Central Europe according to the company are: Strabag, Hochtief, Metrostav, and Balfour Beatty [4].

The company prides itself in being an innovative force in the construction and development business. A document was made underlining their intention of becoming a worldwide player in ecological and sustainable development questions by the year of 2020. The agenda is called *Aspirations 2020* and is composed of these points [5]:

- Industry- leading total shareholder return
- Balanced value creation between Construction and Project Development
- Recognized as a preferred partner when it comes to creating solutions that meet customer's needs
- Living values and recognition for being a value-driven company building for a better society
- An injury-free and ethical environment
- Being the most attractive employer in the industry
- Cooperation within and between units and business streams as one in high-performing teams

- Improved operational efficiency

2.1.2. Skanska in the Czech Republic (Reality, Property, Construction)

In the present day in the Czech Republic, Skanska functions both as an investor and a contractor at the same time. The subdivisions for investment in this company are Skanska Property and Skanska Reality. It has reached a turnover of 14,5 billion Czech Crowns in the year 2016 [9].

Skanska Property specializes in the development of office spaces across the Czech Republic. The well-known projects in the portfolio include Corso Court (the building SKANSKA headquarters for Czech Republic are placed in), Visionary (a modern office space in the vicinity of Nádraží Holešovice), and Riverview (an intelligent office building on the bank of Vltava river). The whole department is concerned with creating attractive and intelligent office spaces with the use of multidisciplinary approaches and the internet of things [6].

Skanska Reality is the subdivision responsible for urban development and housing. The whole company takes great pride in the sustainability and ecological friendliness of their projects [6].

Skanska Construction is the subdivision for all of the constructing work. The subdivision executes all of the contracts from the two investment divisions. Infrastructure development and railway construction are other fields of specialization. Here SKANSKA enters the tendering process with other companies on the market [9].

All of Skanska subsidiaries all over the world are obliged to follow their self-made code of conduct [5]:

- Care for Life
 - Care for people and environment
 - Work safely, or not at all
 - Promote green solutions and run operations in a green way
 - Being accountable to future generations

- Act Ethically and Transparently
 - Do business with a high degree of integrity and transparency
 - Live by the Code of Conduct and never accept shortcuts
 - Foster a climate where everybody can speak their mind
- Be Better – Together
 - Strive to be better in all we do
 - Learning organization, which shares its experience
 - Take pride in quality and innovation
 - Leverage diversity to deliver the best solutions
 - Showing trust and respect for each other
- Commit to Customers
 - Help customers to be better in their business
 - Strive to understand customer's needs
 - Help their customers in turning visions into reality

Skanska Values

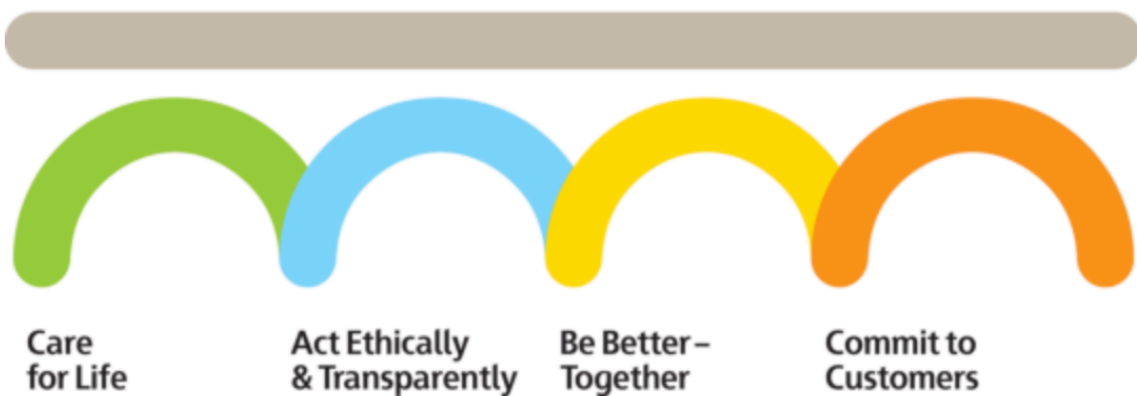


Figure 2.1 - Skanska Values [5]

2.2. Our chosen middle-sized company

The company chosen for the comparison with SKANSKA will not have its name published. It is a medium sized company with the number of employees varying between 150 and 250. The company functions with a turnover of approximately 1,1 billion Czech Crowns [1].

The company was created as a limited liability company in 1993. Due to its positive economical results the company has been transformed into a stock company in the year 2000. During 2003 and 2005 was the observed company named in the top 100 companies in the field of civil engineering in the Czech Republic. It has achieved to exceed a turnover of 1 billion Czech Crowns in the years 2009, 2015, and 2016. In 2014 company wins the prize for the best mid-sized construction company in Czech Republic [1].

The field of expertise for this company is Infrastructure development. The company describes its concrete specialization in building underground utilities as well as covering these utilities with road infrastructure [1].

Furthermore, the company honors the Integrated System Management politics. The company is therefore bound to [1]:

- Adherence to stakeholder requirements, continuous improvement of processes and activities with emphasis on the efficiency and quality of each individual process
- Commitment to provide resources for achieving goals and creating a positive and motivating environment to increase the overall performance
- Increase the quality of work to meet the needs of a customer
- Minimizing the impact of company's activities on the environment and health through the introduction of new technologies
- Prevention of risks in the area of health and safety and environmental protection. Controlling unresolvable risks with maximum effort at all levels of management
- Improvement of internal communication, with a goal of ideal awareness

- Enhancing the skills of staff in terms of quality, environmental protection, occupational safety and health safety

2.3. Conclusion

A brief overview of the two chosen companies has shown us these outcomes:

- Even though these companies have different amounts of employees and Skanska has thirteen times the revenue, the inner ethical codex of both firms is fairly similar. Both of the companies are aspiring to be ecologically friendly and create a sustainable production.
- Both of the companies are listed on stock markets, therefore have obligations not only to their shareholders but also to their stockholders.
- Both of the companies see the employee as the most important asset. Companies are aware of their employees' value and are prepared to give him benefits, other than salary, to keep the employee happy. Intrinsic motivation

2.4. Improvement methods

The world is changing with a very fast pace, creating new technologies and new problems with them. Both of the companies should take strong grasp of the new technology offered by the market and incorporate them into their way of working. The trend nowadays is to become more green and sustainable. Companies can profit from their effort of being sustainable and ecologically friendly by marketing themselves in a correct way. Companies should create a marketing subdivision if they have the capital, if not they should hire an outside professional to guide them through the process.

3. Employee and the company

Employee is characterized as an individual, who is working under a contract of employment. Moreover, it is a person who recognizes his/her rights and duties in a given company.

A content laborer will boost not only the performance of him/herself but also the performance of other laborers in the working group. Every company thrives to create an environment with motivated and contented workers. Creating this kind of environment can be a profoundly complex task with research on this matter being underway even in this very second. A human being, in comparison with a machine (which is not dependent on its outside environment in the same way as a human being is), can give original answers to said problems and therefore create much greater value for any company. The switch from human labor to machine labor in the field of civil engineering will never be as substantial as in other fields. Civil Engineering requires a great deal of originality in dealing with problems and therefore happy and motivated employees are of crucial importance to these companies [11].

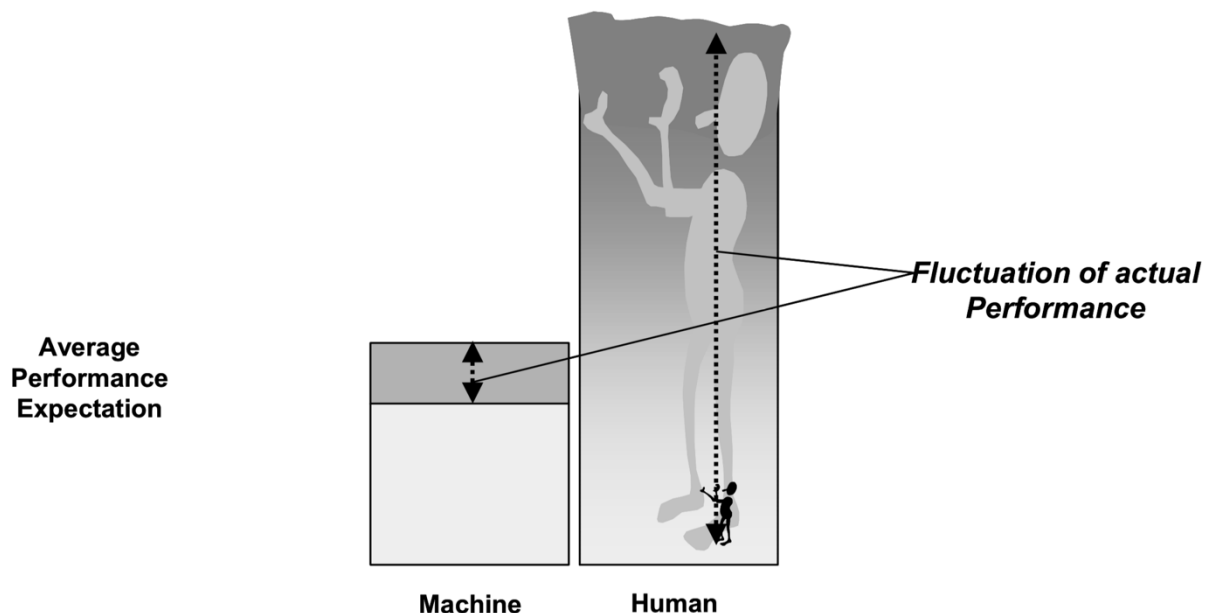


Figure 3.1- Performance expectation [11]

3.1. Search for talent and optimization of performance

3.1.1. Search for talent

First step for companies is to find and make good use of employee's talent. Every employee is an original with his positive and negative traits. The search for talent can be executed in two forms [11]:

- Buying a talented worker
- Growing a talented worker in the company

There seem to be many misconceptions about how to acquire a talented worker with an original approach, great managerial skills and organizational capabilities. The biggest misconception in finding a talented worker for our respective field, is that his or her potential can be identified early. Research has shown that employees talent for a given task at hand can and will emerge in time and with practice. Notion, suggesting that talent is an innate skill is also a false one. The person's ability to execute a given task depends on his practice and experience in the field and not on his innate skills.

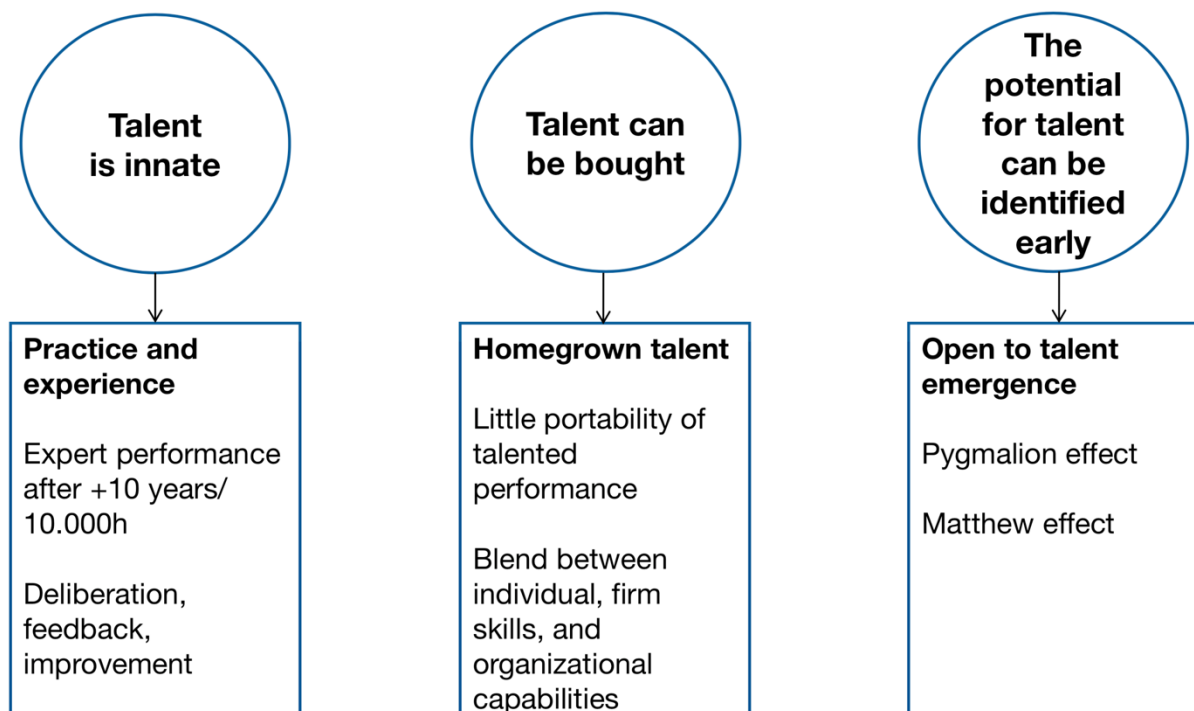


Figure 3.2 - Common misunderstandings in talent management [11]

An important notion in finding and managing talented workers is to create programs and trainings, which are open to all. If the firm has a greater pool of workers to choose from, then it also has a greater probability of finding the most talented one. Companies are to be stubborn in democratizing training opportunities for all of their workers. Moreover, companies are to be on a lookout for individuals with a desire to develop since the desire to develop is oftentimes an even greater asset than talent itself. The results will not come immediately but only after a given time period, after which an employee has sufficient practice in his or hers work [11].

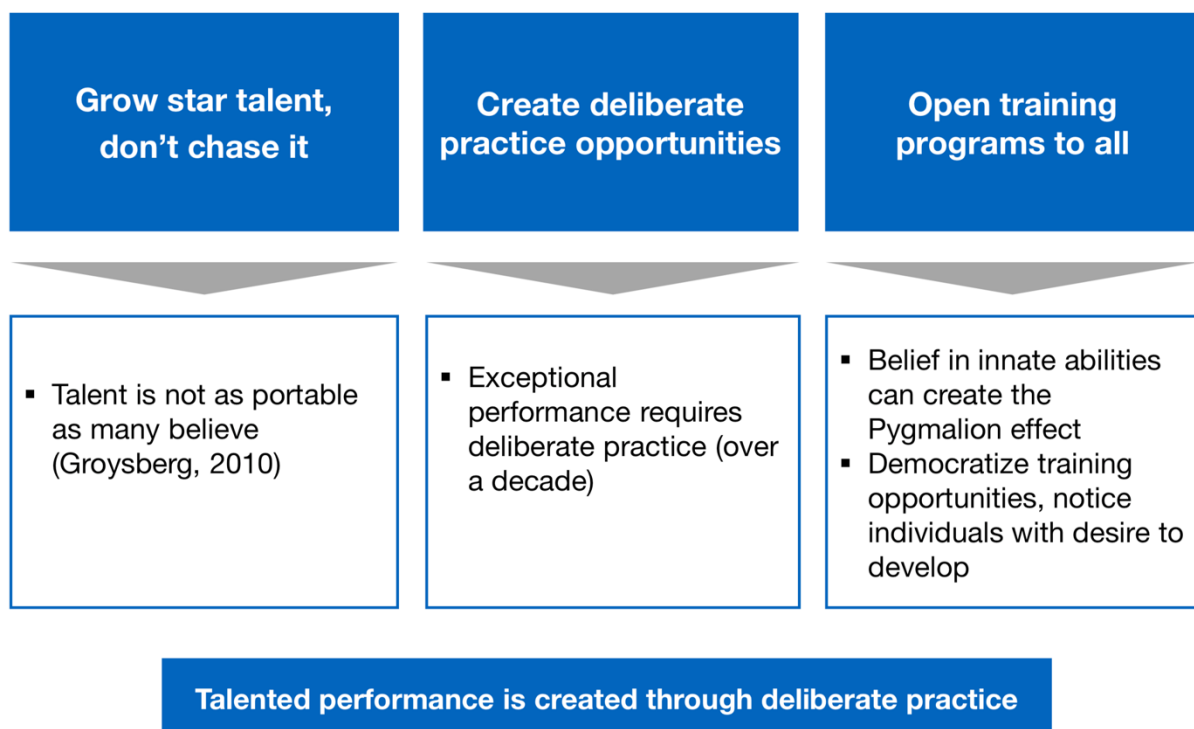


Figure 3.3 - Implications for talent management [11]

3.1.2. Optimization of performance

Every employee has his own level of performance which is to be measured and controlled. The challenges in employee performance management in civil engineering are [11]:

- The quality of today's executive decisions and how they affect future performance

- How can influence of unpredictable economic, social, and legal changes be eliminated
- How to estimate who contributed and how much on a given project
- How to measure original solutions, creativity and innovative work

Evaluating the performance in the field of civil engineering is mostly done by contracting and with given employee bonuses for work well done. The set goal will always be a profitable construction project with all of the deadlines met and with all of the stakeholders content. In reality however, companies hardly come across such a project. The talent and ability of employees of a given construction company is mainly measured by how they react when the project is not going according to the plan. An employee with an ability to reverse the course of a project which is not meeting its deadlines, should be rewarded in a well working organization.

The fault some small to medium-sized companies make in the use of their employees is not setting them into a firm workplace with clearly given tasks. An employee is most productive when it is clearly stated what his tasks are, and these tasks are only within the borders of a specific field. An "everybody does everything" situation can oftentimes be observed in such companies. Reason for this situation could be, that the company does not diversify their work enough and does not appoint correct employees to the type of work they are talented in. The employees don't have the needed certainty of their workplace and tasks and therefore are not always fully prepared for every task, which awaits them. The productivity is clearly decreasing. On the other hand, this type of management can and was many times useful predominantly in small firms during a financial crisis. During a financial crisis a company has to react very flexibly to the situation at hand and companies with the most flexible personnel usually profit from the firm's flexibility on the market.

3.2. Management structures

The process of acquisition and performance evaluation of employees will not be useful if these laborers were not firmly set into a firmly set management structure. There are four main mechanisms of coordination existing in today's world [10]:

- Management by hierarchy
- Management by self determination
- Management by programs and rules
- Management by scheduling

The two most important managerial structures for selected companies are management by hierarchy and management by self determination

3.2.1. Management by hierarchy

In this type of management, the communication proceeds vertically down or up the company ladder. On a construction site, a project manager gives instruction to a foreman who then mediates the order to lower ranked employees. The feedback then travels the other way around from lower ranked employees through foreman to project manager who then informs his superiors. The superior employee is always responsible for the decision being made. With this net of information, a short term forward and feedback coordination happens. This type of coordination is ideal for a construction project due to its flexibility and simplicity [10].

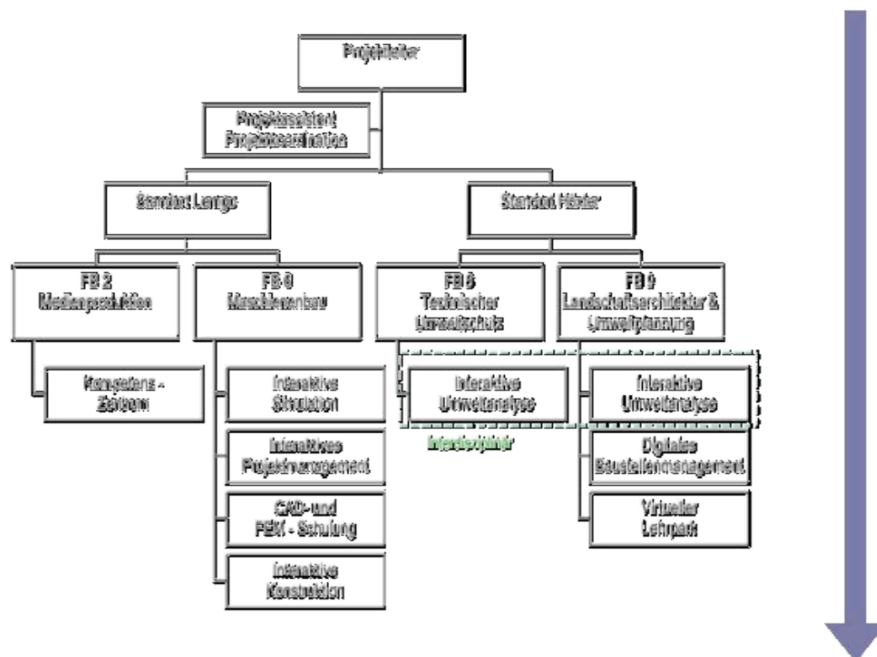


Figure 3.4 - Management by hierarchy [10]

3.2.2. Management by self-determination

Management by self-determination is based on a principle, in which a cluster or a group of employees is responsible for the decisions being made. To be able to generate such decisions a power has to be granted by a higher ranked employee or a group of employees. This type of management creates a horizontal structure and is very effective in development projects where a high level of creativity is required [9].

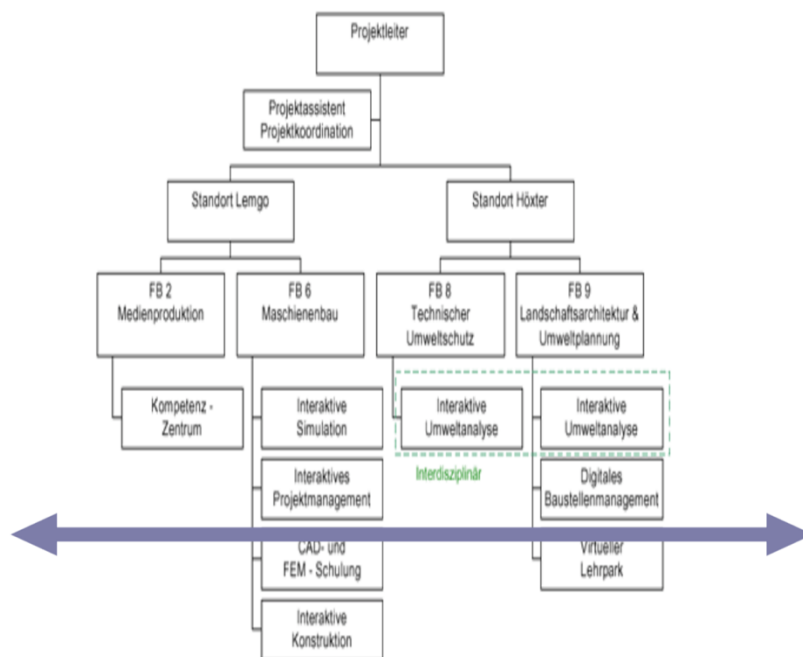


Figure 3.5 - Management by self – determination [10]

3.3. Implications for Skanska

3.3.1. Skanska Reality and Skanska Property management structures

Management structures for the development branches of Skanska in Czech Republic use a mixture of both the management by self-determination and management by hierarchy. Their projects are development projects. The organizational structure consists in case of Skanska Property of around twenty-six people divided into groups which have their own respective leaders. The management structure compliments the projects, which even though are all original,

are not purely innovative. If these projects were more innovative it would make sense to change the management structure to a purely self-deterministic one.

3.3.2. Skanska a.s. management structure

The managerial structure is purely hierarchical. All of the information moves on the ladder up or down vertically. The person responsible for the decision is always the one with a higher hierarchical rank. Even though the works are coordinated in a proactive way (to prepare for unexpected problems rather than react to them), the hierarchical management offers reactive solutions on the base of effective feedback between employees.

3.3.3. Search for talent and optimization of performance

Being an international player with great capital to dispense and a wide variety of projects ongoing, Skanska does not have to acquire talented employees from other companies. The system is set from the beginning to prepare and develop skilled laborers in their own ranks.

Having multiplicity of trainee programs, where potential new talents are recognized by the H.R. department. These trainees work in the company on a part time basis in different fields of civil engineering. The spectrum of work is broad, and trainees are helping every department to find their future workplace by their preference. At the end of a trainee program the company and the trainee himself/herself evaluate whether they are the best fit and feel comfortable in the working environment.

After successful trainee program and a mutual agreement to continue to work for a company, the new employee becomes a stabile position in the company as well as set tasks, which he or she is expected to fulfill.

3.4. Implications for the chosen middle-sized company

3.4.1. Management structure

The company being mostly a subcontractor not having any development projects whatsoever has a hierarchical management set in place. The company director is a direct superior to five department directors. These five departments are set in place to manage the company on a day to day basis. Departments are interconnected and communicate frequently. The five departments are [1]:

- Department of construction and manufacture
 - construction erection
 - supply and storage
 - geodesy
 - electrical engineering
 - certified systems QMS, EMS, OHSAS
- Department of technology
 - pricing and tendering
 - construction preparation
 - contracting and advisory services
- Department of business
 - marketing and advertising
 - insurance
 - business commerce
- Department of mechanization and infrastructure
 - internal logistics and transportation
 - machine service and rental
- Economical department
 - accounting

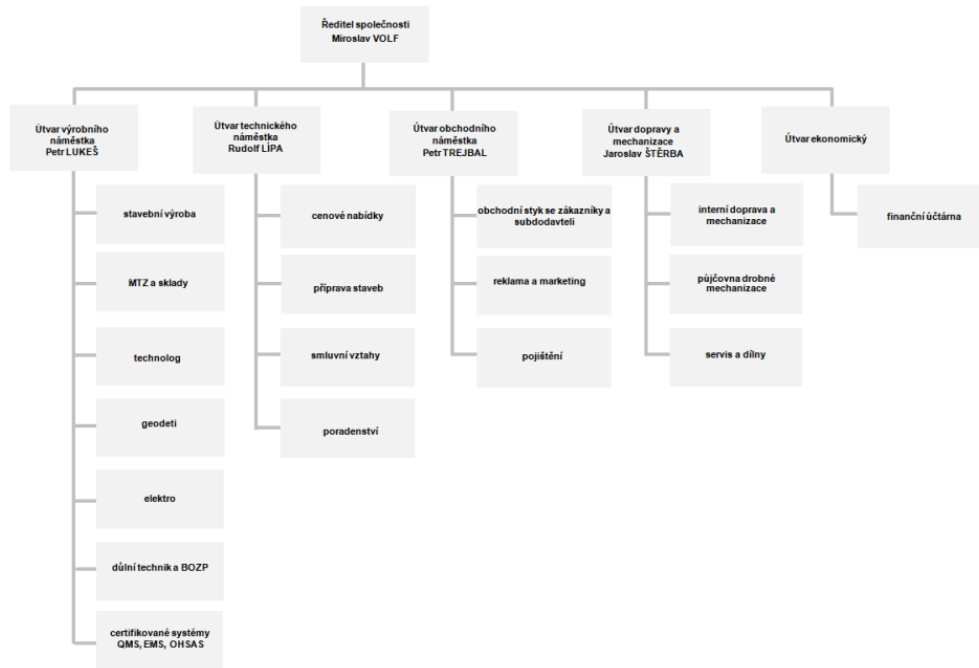


Figure 3.6 - Management structure of a selected company [1]

3.4.2. Search for talent and optimization of performance

The search for talent is by its nature not completely different to the one described in the example with Skanska. Most of today's employers already prefer to grow their top employees from the ranks of the company. However, it is not completely successful all of the time in comparison with the example before. The complexity of tasks and oftentimes lack of specialized personnel forces the company to use employees in a much broader spectrum. Many employees have to cover many fields to keep the company up and running. This fact is a negative since the respective task will not be executed perfectly if the employee has a few more other tasks.

Being a middle-sized company, the company is in the highest risk of being strongly affected or even destroyed by a financial crisis similar to the one we saw in 2009. The question of how to preserve a company when there are not many investments made into the construction business is a crucial one.

3.5. Improvement methods

Gathering from the information above, a crucial point in acquiring and keeping highly motivated and talented employees comes with a price. If a middle-sized company decides to standardize the amount and type of work for every employee, and keeps other variables the same, it should boost the overall performance of a company. The company will then see larger revenue and overall profitability. However, in the times of financial crisis, the company should be able to bounce back to a more flexible role for an employee. The employee will not be as content as he or she was during a more standardized model of working, nevertheless the top management should be experienced enough to explain the newly created situation.

4. Factors of success

4.1. Definition of a successful project

To consider project as a successfully accomplished one several demands have to be met [10]:

- All of the quality demands by an investor have been met
- Project works have been finished on time
- Project has not exceeded its own predefined budget

These three demands create a so called “magic triangle of project management”. Not exceeding project’s own predefined budget is a quantifiable measure which can be elaborated quite fast. Either we have exceeded the predefined budget or not. Similarly, the ability to meet target dates is well quantifiable. On the other hand, meeting the quality requirements is a much more complex task. Quality demands create a major part of contracting, with both sides having their say on the matter and creating compromises. The investor appoints a controlling person or a group of people to execute quality checks. The final decision on the quality is also a matter of compromise, or in a worst-case scenario a matter of justice system in the Czech Republic.

The project is to be marked definitely successful if all of the stakeholders are content with the result of all of the works.

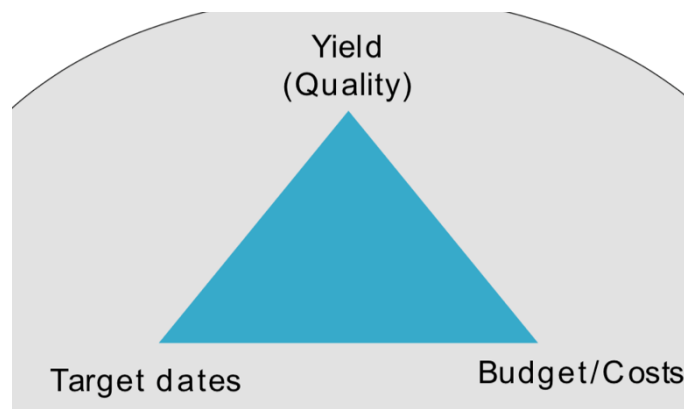


Figure 4.1 - Magic triangle of project management [10]

4.2. Investment projects

Since both of our companies are non-governmental and enter public tenders to acquire contracts, all of their construction projects can be considered as investment projects [10].

Success of an investment project can be measured monetarily. This simplifies the whole success measurement by quantifying the earnings of contractors and expenses together with the revenue of investors.

However, oversimplification is not at place because even though the project success is measured monetarily, many various parties get involved over the duration of a whole project. The shareholders of the contractor, who provide needed capital. Staff management, which constructs the building. The town administration, the town authorities, neighbors and last but not least the subcontractors of the contractor. All of these entities have their own notions about a successful project [10].

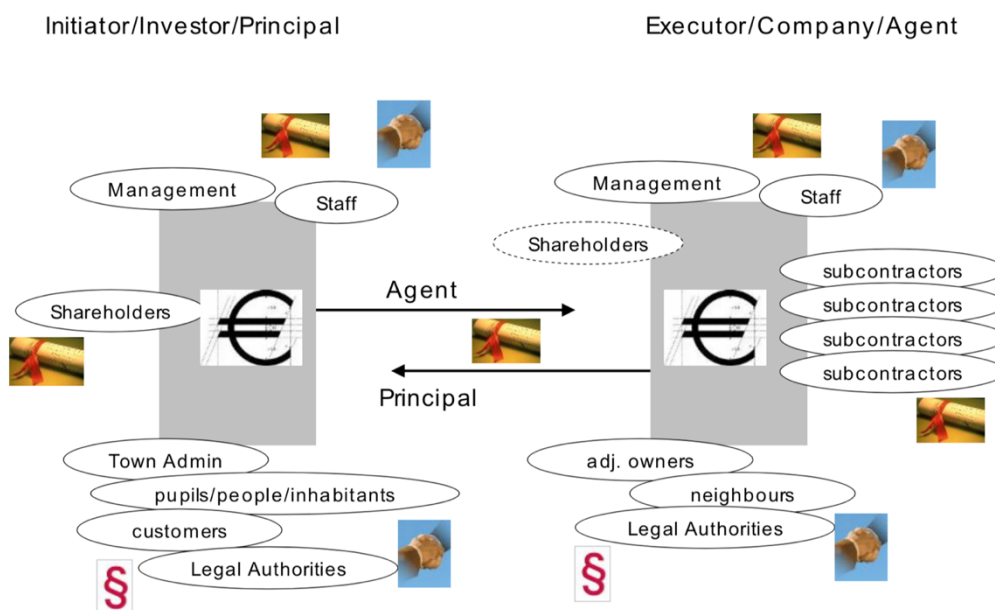


Figure 4.2 - Investment project involved parties [10]

Even though the contracts are usually the main point around which the whole construction project revolves, there are still projects based on other incentives such as good practice, good will, going concern, society, sustainability.

4.3. Factors of success for Skanska

There is a need to differentiate projects Skanska enters as a main investor and uses Skanska construction as a sole contractor, and projects into which Skanska construction enters on the basis of a public tender.

4.3.1. Skanska as an investor

The company creates development projects all around Czech Republic, Slovakia, Hungary and Romania. Being the sole investor, they are usually looking to go through the whole process of a building being made. Construction is only one of the many parts of this process.

The magic triangle can be used here on several occasions. Just by having an investment intention, they create the first and the most complex one. In their point of view, they need to acquire the property on which they mean to construct. They need to go through all of the necessary paperwork and planning (zoning decision, zoning approval, building construction permit, building permit process). They need a designing team with an architect and then also an executing team with a project manager. After the whole building is erected and functioning, the marketing team finds tenants to lease the building and then later sell the building. After all these steps the most crucial aim is to make profit.

Being one of the leading companies in sustainable development in Central Europe, the success of a project also lies on the ability to create a building which is ecologically friendly and safe to use. Health and safety is also a substantial pivoting point therefore, the success of a project is also measured on how well they have preserved the health and safety of all the people involved in the project.

4.3.2. Skanska as a contractor

Factors of success for Skanska as a contractor differ from the classical notion of financial success of a project. Some of the projects, which Skanska does as a subcontractor do not necessarily have to make money. Some projects are chosen just to keep the machinery in motion and extract the need of payment for the storage

of the machinery. These projects also help to train and challenge younger employees to become the talent, which Skanska is hoping to acquire.

In a sense of monetary profit, the most important projects for Skanska construction are infrastructure constructions. Skanska enters public tenders for the construction of railroads, roads, bridges, and tunnels. These projects can be taken as pure investment projects, in which Skanska acts as a contractor. The governing factor of success here is the difference between the construction cost and the reward acquired from the investor.

4.4. Factors of success for a middle-sized company

On the market, the chosen company, only ever acts as a contractor. It enters tenders for infrastructure planning, designing and the execution of the design. The triangle of success will change its values according to the acquired contract. The company seeks to profit from every project it executes. By the growing revenue and growing numbers of employees during the active years, one can make an observation that this company is fairly successful in their struggle to maximize the profit. According to a financial analysis their revenue growth has jumped from 800 million in the year 2013 to 1,1 billion in the year 2015 [1].

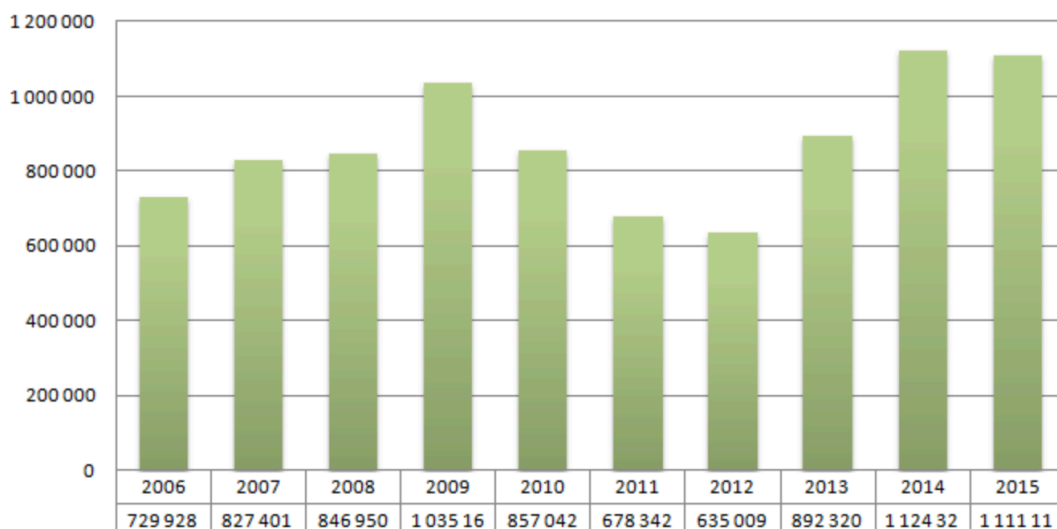


Figure 4.3 - Annual turnover of a chosen middle-sized company [1]

5. Business processes in a construction company

In the construction industry, several challenges occur which are inescapably connected with the organization of projects. The beginning of a project development is carried out by an investor. The effort is to employ consultants and architects in their full potential in order to create a high-quality basis for next development. Project concept is barely influenced by the physical execution, due to the fact that that a construction enterprise is solely carrying out investor's plans.

Implementation of serial production methods, as seen in other industries as mechanical or electrotechnical engineering, is not predominant in the construction industry. The basis for this is that every project done in the construction industry is an original one.

Business processes are not dependent on the project. They purely advance the project to its next stages. For the construction industry, there are five recurring and fundamental processes. A very typical occurrence in these processes is the involvement of an external client, since they always come forward with some request and expect some result delivered. These processes given in a chronological order would be [10]:

- Acquisition
- Tendering
- Contract negotiations / clarification
- Construction
- Warrantee phase

The thesis will be mainly focusing on the business process of tendering. Together with its sub - processes it creates crucial prepositions for the company's management. Company management needs all of the help there is to execute a well-informed decision whether to tender or not [10].

Each one of abovementioned processes consists of its dependent sub-processes. These processes are structured treelike in a defined flowchart. A very common occurrence is, that every of these sub-tasks has to be thoroughly documented and strict responsibilities must be defined.

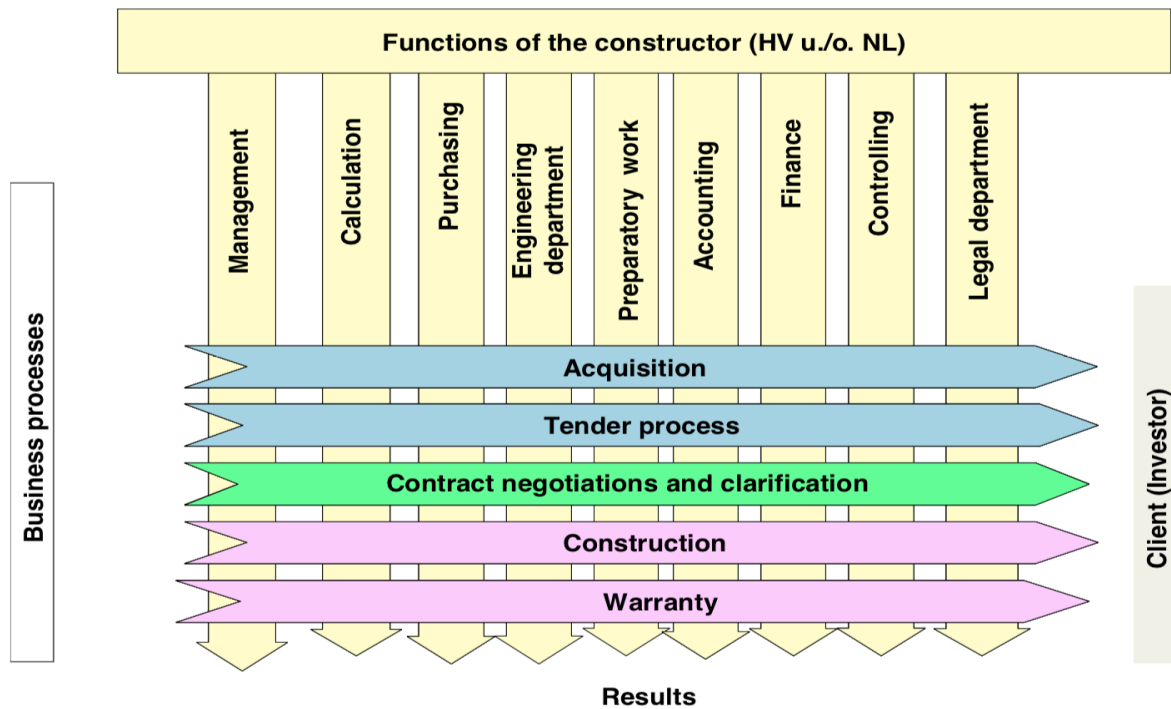


Figure 5.1 – Business processes of a construction company [10]

5.1. Tendering process

One of the very first things usually done with these processes is to appoint a person, who is to be responsible for the entire tendering.

An overview, amount of workforce, financial resources and expected outcomes are to be given upon the responsible person by company management. If the management decides, on the basis of an overview, to bid on a project, there needs to be a project manager appointed.

Project manager's task is to create a and define a project structure. With the help of specialized departments, the management has the final say whether to enter a tender or not. Documentation of each and every step is a crucial part of every business process [10].

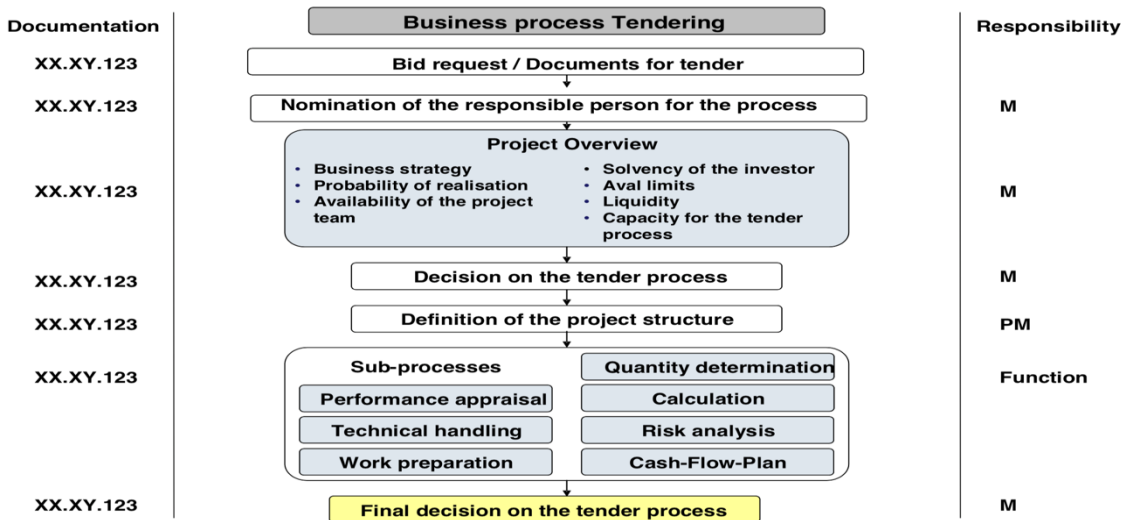


Figure 5.2 – Tendering [10]

5.1.1. Production planning sub- process

This sub-process serves as the basis for the planning of production processes such as scheduling. In order to find out how a project is to be executed and what the needed resources are, further information is required. A wide network of interaction between sub-processes exists. For the method to be functioning we need to select input data from this network. Construction volume or the availability of equipment are some of the input data needed to execute a working production plan.

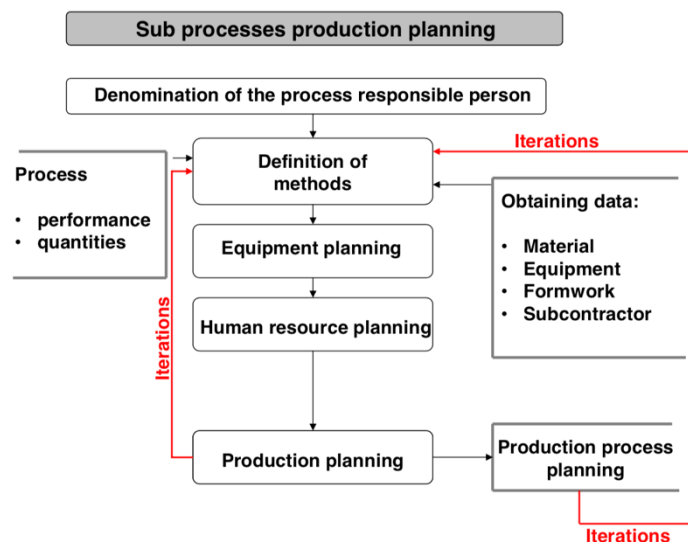


Figure 5.3 – Production planning sub-process [10]

5.1.2. Calculation sub-process

Another example of a sub-process would be calculation. Calculation has a task of elaborating the planned work cost with great precision. The information needed to create a reliable calculation are [10]:

- production planning
- construction methods
- material and equipment costs
- overview of risks

A company sets their pre – set required profit in order to combine it with the calculation to work out the final price.

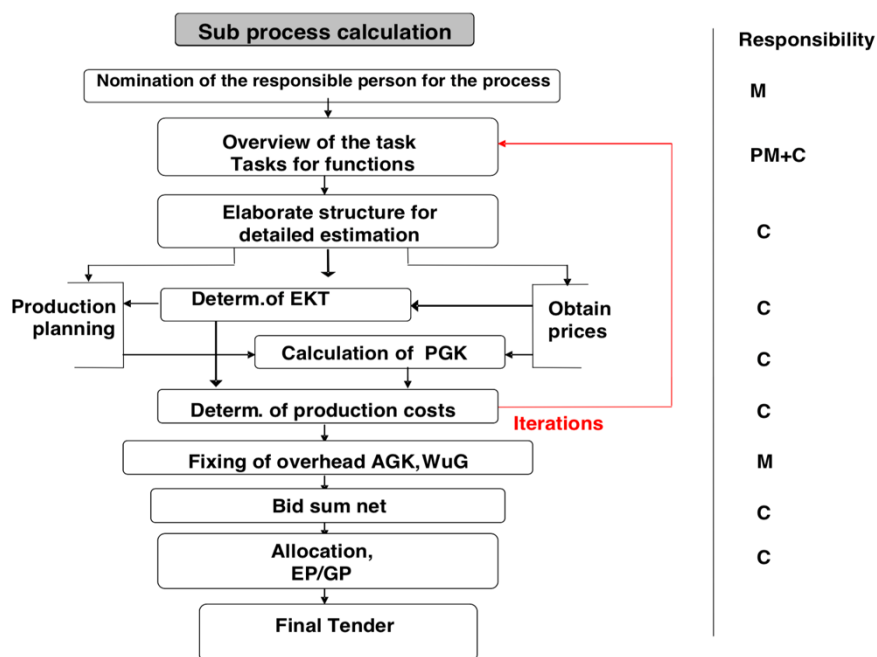


Figure 5.4 - Calculation sub-process [10]

5.1.3. Cost estimation methods

Cost estimation represents a massive part of calculations for an investor. Being a base for a successful project, cost estimation is one of the most challenging as well as time consuming tasks. It requires many skilled professionals working in the field of civil engineering for many years to create a feasible cost estimation. An investor requires to know the cost estimation in very early stages of a project. After

acquiring these estimations an investor needs to make an appropriate decision whether to invest or not.

Project management has seen two cost estimation methods prevail over the past years [10]:

- Cost estimation method without explicit denotation of cost influencing variables
 - A very general approach
 - Requiring aid by consulting experts
 - Usually using trends moods and fashion
 - Difficulty with the anonymity of interviews
 - High time consumption
 - Groups don't exchange experience
- Cost estimation method with explicit denotation of cost influencing variables
 - Based on a standardized structure
 - Possibility to use nonlinear estimations with parametric procedures
 - Kilogram Cost Method
 - Use of cost database
 - Indication for specific constructions
 - Parametric cost estimations

5.2. Models of proceeding

In conducting a construction project, certain models of proceeding are needed for it to serve as a coordinated procedure. Input for initiating an activity and an output which is an actual result of a specific activity, are defined in models of proceeding. Four basic elements form models of proceeding:

- Project phases
- Activities
- Milestones and milestone results

5.2.1. Project phases

Project phases can be defined as temporal segments appearing in a project not necessarily sequentially but can overlap chronologically as well. Project phases have to be factually separated from each other [10].

An Association of Engineers and Architects in Germany has come forward with five distinct project phases. The Association has also connected these phases with some exemplary tasks executed during these processes [10].

	1. Preparation of a project	2. Scheduling	3. Preparation of execution	4. Execution	5. Finalizing a Project
A. Organization, Information, Coordination, Documentation	obtaining essential agreements with the client	documentation of essential planning data in a project manual			
B. Qualities and Quantities	Assistance in determining the required space, required areas and constructions, as well as determining the demands concerning standards and configuration		verifying tender analysis concerning engineering and commercial terms	checking of modifications in execution...	checking indices of warranty
C. Cost and Financial Management	checking and authorizing payment of an account	scheduling of cash flow			release of account for payment
D. Deadline, Performances and Logistics	arranging general implementation schedules, aligning a schedule to the limits of capacity	scheduling planning processes		processing of execution for the compliance in order to keep the deadline as scheduled	

Figure 5.5 – Project phases according to the AHO with some exemplary tasks [10]

5.2.2. Activities

Activities are used to determine how a certain process needs to be done, who is supposed to do it and what the expected time of completion is. They are used to assign resources linearly on a time axis and produce the result linearly. If a company implements activities into a network plan it should get a schedule as an outcome.

5.2.3. Milestones and milestone results

Milestones serve as intermediate targets for a project. These are the phases of a project when an important decision is expected to be made. They define phase transitions. Example for some decisions which can be made upon arriving at a certain milestone [10]:

- Release of a consequent phase
- Repetition of one or more previous phases
- Termination of a project

Various kinds of milestones can be observed in a construction project. We can make milestones out of target dates and dates to be measured, scheduled and actual costs or a specific milestone result (a creation of a product or its part).

Milestones are not always necessarily tied to a construction project, but can represent various elements [10]:

- requested specification coming from a client
- mandatory specification approved by the project management committee
- approval of a construction plan by an authority
- revised work structure
- revised schedule

5.3. Potentiality and standardization

As seen above, methods of execution are not changing from project to project. Methods stay the same for every project. Knowing these facts, optimization and standardization of a process is possible [10].

A company should try to train its staff to sharpen their competences in terms of business processes. Project itself, due to the high originality cannot be standardized. However, the beforementioned processes can be standardized and therefore making the execution of a project more of a routine for the employees. Standardization is

usually accompanied by a boost in performance in a company. Profit of a company is the main indicator of whether the standardization has been successful or not.

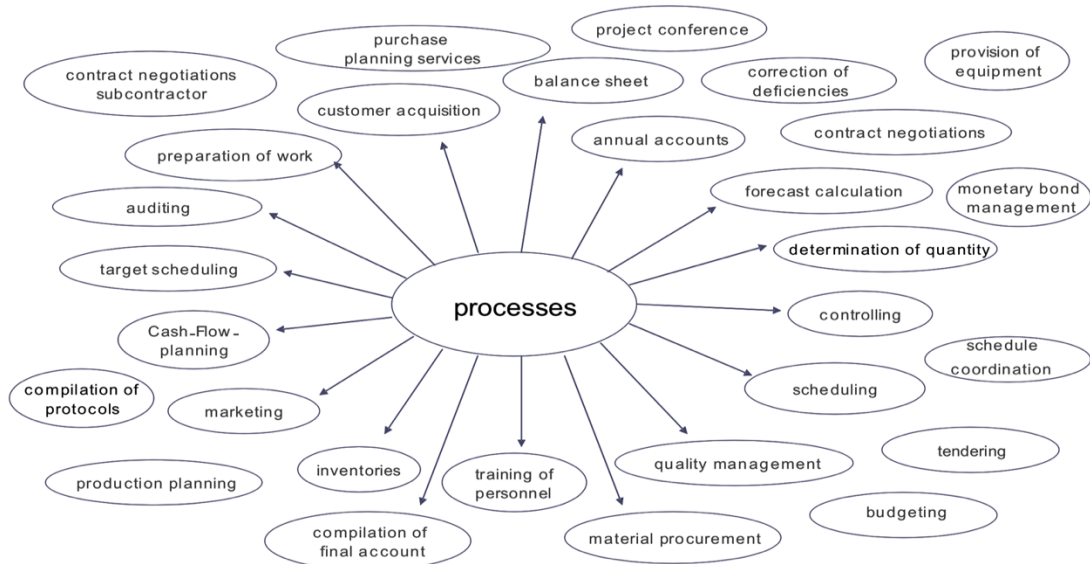


Figure 5.6 - Processes in construction industry [10]

Above figure shows some of the construction processes, without which a construction would not be finished successfully. All of these sub-processes can be assigned to one of the five mentioned business processes in a construction project.

The state and the potentiality of standardization is shown on the following graphs:

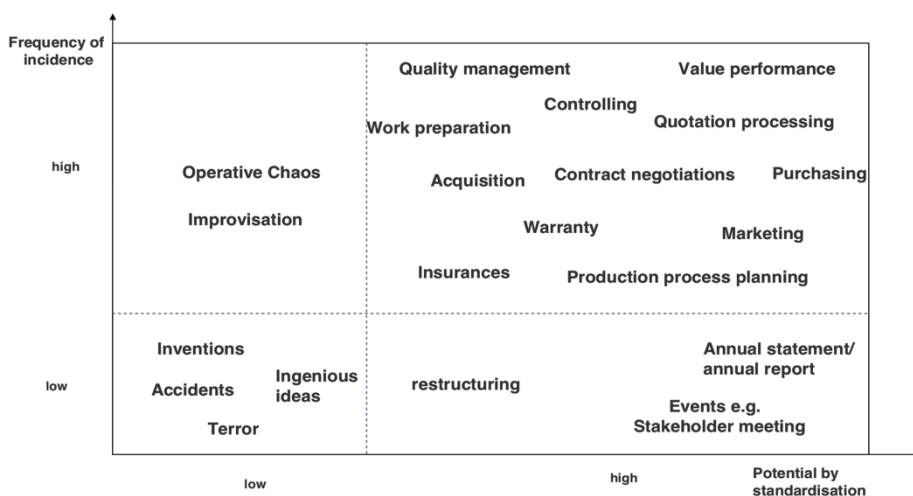


Figure 5.7 - Classification of processes [10]

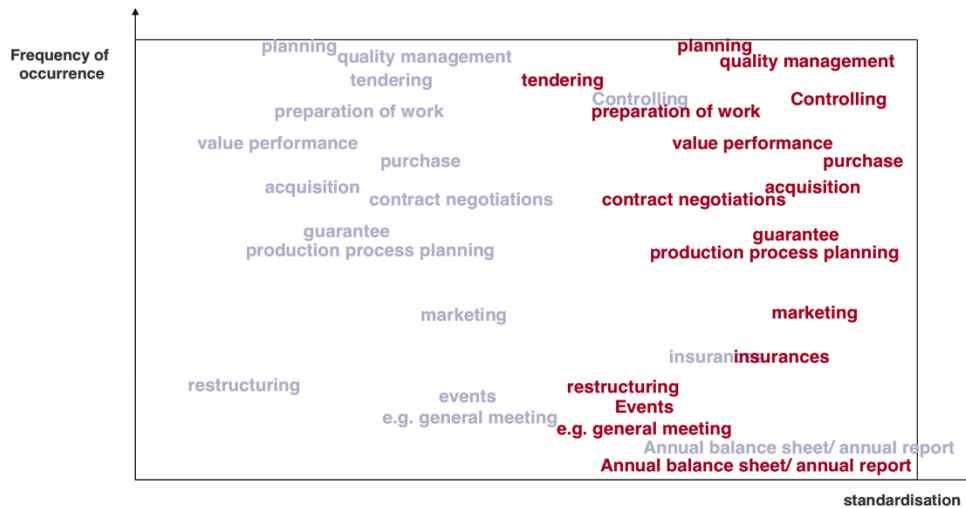


Figure 5.8 - Classification of processes – target/ performance [10]

Organization, which considers itself as a project driven company has an aim in maximizing of the standardization and to minimize individual approach. In the construction industry, these facts serve as one of the key aspects in bringing of fundamental innovations.

5.4. Implications for our chosen companies

Both of the companies have their own dedicated tendering teams, which are experts in the field of cost estimation, calculations, and production planning. Having talented employees in this division offers a great money and time retention, if the talent is used in a correct manner

Companies should encourage the employees to create a protocol from every project they were involved in. This protocol would contain most important information about processes, sub-processes, and estimations used. The protocol would also contain a rating of these processes and estimations, to spot the proceedings which were successful and the one ones which were less successful.

Main points in a creation of an operation manual specially tailored for a specific company could be summarized into a table:

Main characteristics of an operation protocol
After acquiring enough protocols, a management, production, calculation, and last but not least construction processes will be collected, and an operation manual will be created.
An operation manual will serve as standardized document adjusted solely for the employees of a company. The manual should be updated frequently in an effort to update the information which is out of date. It should unburden the higher position employees from the need to explain concepts to lower position employees. It creates a channel of how important information and know-how from previous projects could be implemented into an ongoing one.
If an employee comes at a waypoint from which he or she does not have enough experience to continue, the operation manual should help him make a well-informed decision. More experienced employees should have the right to edit and update the manual, since they have more skill and background to various tasks.

Figure 5.9 – Main characteristics of an operation protocol

Some of the biggest player in construction industry already have such a document. Problem for small and middle-sized companies comes with the capital needed for creation of such document. These companies depend solely on skill and knowledge of senior employees which in turn teach junior employees. The teaching however, takes away time in which senior employees can be productive and therefore slow the overall production down. A solution to these problems will come with the advancements in modern technology. The internet and its cloud could offer a way to store edit and update much needed know-how and experience of senior employees.

A practical protocol envisions the peak of standardization for a company. With such document, company works efficiently and is able to bring innovation through every rank of their workforce.

6. Operation manual

This chapter will deal with the content and arrangement of an operation manual mentioned above. This manual should be used as a template for manuals being created in small and middle-sized companies.

The manual will be based off of similar documents created by construction companies in the Czech Republic and their international partners, to standardize all of the processes and to contribute to an improvement in production.

Operation manual will be divided into four equally important chapters, which are describing the correct path to be followed by a subsidiary to maximize standardization. The four chapters are:

- Management
- Relationship with a client
- The projects
- The personnel

6.1. Management

Overall aim of a company is to ensure satisfaction from all of the parties involved with a company. These parties are: the clients, customers, owners, employees. The document should describe the course of action needed to achieve this aim, while upholding the needed quality, sustainability and health and safety standards.

Each employee is to be informed about the impact his work has on the overall operations of a company. He or she should have access to documents dealing with the company's:

- Business plan (objectives and targets)
- Management manual
- Project plan

- Tools
 - guidelines to achieving wanted business plan, project plan etc.

A management representative should be selected by the top management, in order to coordinate and update the operation plan. This representative should be appointed on a regular basis by a top management representative. He or she should document all of the revisions and their dates.

The top management should prepare a business plan with vision, targets and policies to be met in a given horizon. Every employee should be informed about the targets set and should be committed to achieving this target. A business plan should include:

- Vision
- A thorough market analysis
- Business analysis
- Objectives and targets
 - Safety
 - Sustainability
 - Profitability
 - Quality
 - Management development
- Plan of action and plan of decision

The business plan should also include a standard for a project. Keeping minimal required standards ensures the quality of each project executed by a company.

Organizational structure should be clear and intuitive, and every employee should know under which unit he or she belongs. An organ should be appointed in each unit which is to take responsibility and authority over every decision a unit makes. A project manager should be appointed for every single project executed by a company.

The role of management is to develop and run the company according to the beforementioned business plan. Management finds methods and evaluates whether set targets have been reached.

A set document about financial reports is to be used by every unit to reach the highest level of simplicity in the final evaluation. These financial reports should include:

Accounting	Working methods for accounting, finance, insurance, investments, collaterals, and warranties should be all found in a specific document
Forecasting	Forecast of results for a current year should be submitted regularly in form of income statements and balance sheets and cash flows
Internal financial reporting	Quarterly financial report is to be submitted to the top management for evaluation

Figure 6.1 – Financial reports

Rules for communication within and outside the company should be created, in order to transfer information through a company directly and clearly. It is advised to appoint a working language which is used for all internal documents within a unit. The communication of the employees should not harm the good name of a company.

A sufficient number of employees has to be employed in order to execute all of the work needed, in every respectable field, for a smooth running of a company. All of the documents, which are or have a chance of going into public should be revised and signed by a responsible person. Documents and digital information are to be stored for as long a period as the law requires.

All of the employees should make all of the precautions needed in order to prevent a crisis. All of the risks have to be analyzed in order to selecting the best way of preventing them. A plan should be made in case of an emergency and every employee should be educated about this plan.

Feedback from clients and the employees as well as an internal audit should be collected and evaluated by a selected employee.

6.2. Relationship with a client

Successful business operations are an accumulation of previous experience with clients' needs and requirements. The knowledge of past experience with a client can help a company into creating new targets and generating new business opportunities as well.

All of the steps during a project are to be thoroughly communicated and later executed with a client to ensure clients satisfaction. A company should make an effort to create a long-lasting relationship with clients. Trained individuals with experience should be the ones making contact with a client. A client is to be invited to every meeting concerning the project and should know all of the details of the proceeding.

6.3. The projects

Construction projects are divided into their respective phases. Objectives for each project phase are to be set. These objectives deal with profitability, client benefits, quality, timeliness, and sustainability. All of the company's personnel should be informed about these objectives.

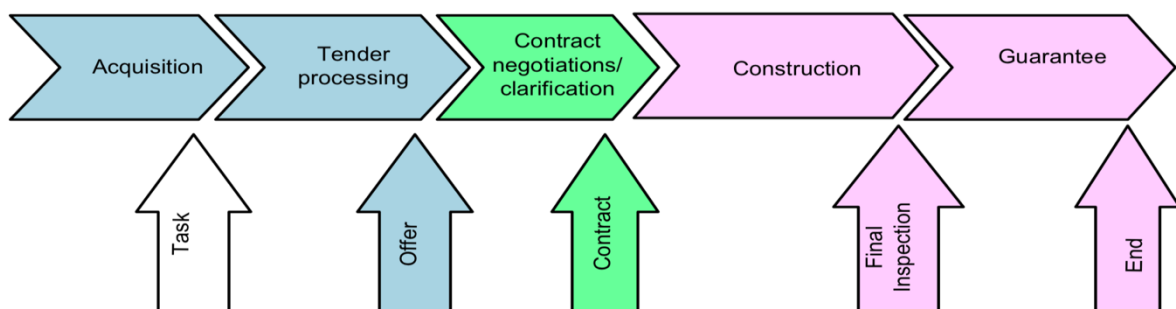


Figure 6.2 – Project phases [10]

Every project phase has to have its own cost control. Costs are to be checked regularly according to a plan of production. Cash flow graphs are to be produced regularly, in order to observe the flow of money through a project.

Time schedules have to be prepared according to the complexity and the size of a project. An extensive schedule is prepared before the project and sub-schedules are created along with the processes.

During the construction period, all of the subcontractors and suppliers are to be coordinated by a Project manager. Meetings are being held over the duration of construction in accordance with a production plan. Reports are to be made monthly from a construction site in order to evaluate the negatives and positives with a goal of updating the operation manual.

After the construction, a warranty period takes place. Before this period a company must meet with a client and evaluate whether the construction was successful and without any defects. If a client finds any defects, which are the fault of a construction company, a compensation is to be agreed upon.

6.4. Personnel

The company should be attractive for people considering their next career move. Development and retention of employees is a commitment a company has to take. The employees are the main force in making a firm successful. Every person should have an equal opportunity to be a successful employee in a company.

Sexism and racism have no place in today's society as well as in the company. No employee should be evaluated by any mean other than his or her performance. Drugs and alcohol are prohibited on the workings sites, it is every employee's duty to report suspicion or addiction.

Recruitment is a process based on the strategy of a company. A company recruits people with the same vision and values as the ones of a company. Attention to equality in a recruitment process is a commitment of a firm. Before an employee is accepted into his or her new position, a recruitment process has to take place.

The team has to create friendly atmosphere for a new employee as the company values good relationships between laborers greatly. New recruits are informed about the operational manual.

Company has an obligation to develop its employees and use them to their full potential. Employee should know his value for the company and should be rewarded accordingly. Through education and training the company makes its employees ready for every challenge in their professional career.

Managers on all levels should be supported and developed to maximize their leadership skills. The development does not consist solely of education. The development is a complex mixture of education, experience, responsibility, and trying different positions within a company.

7. Conclusion

Various standpoints from which a company can be evaluated have been introduced. These standpoints have been later on applied onto Skanska and a middle-sized company. The two companies have been compared thoroughly according to chosen standpoints and some solutions have been introduced.

It has been argued that from an employee performance standpoint, improvement comes in higher uniformity of work. Tasks at work for a particular employee should be of similar character and be challenging enough for further employee talent development. However, the approach for a greater employee uniformity comes with some disadvantages. Uniformity makes an employee less flexible which in turn can make a company less flexible. Managers have to work diligently to skew the balance of flexibility and uniformity according to the state of the economy and the needs of a company.

Factors of success for each company have been reviewed as yet another standpoint. With both of our companies being non-governmental the focus was mainly on investment projects and their application. The main difference between our two companies has been found in a fact that Skanska oftentimes acts as an investor, whereas the middle-sized company depends solely on their work on contracting projects.

A chapter was dedicated to business processes in a construction company. A closer look on tendering, production planning, calculations, and last but not least cost estimations has offered solutions to how a company should execute these processes. Moreover, models of proceeding during construction projects have been evaluated and at the end of the chapter everything was implemented onto our chosen companies. Standardization was argued to be a governing point in the improvement of these processes. The main notion was to create an operation manual consisting of past experiences and practices, with every employee being able to access this manual. The practices which were judged as the most functioning would be described in the operation manual as the governing ones and the ones which will subsequently be implemented into future projects. Such operation manual

should unburden senior employees with having to explain every task to junior employees, and therefore losing time in which they could have been productive.

The end of the thesis has been concerned with creating a sample operation manual, which after some adjustment could be tailored for every company and therefore standardize most of their work. This would result in higher profits, content employees and an improved base for future projects.

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