



HØGSKOLEN STORD/HAUGESUND

Evaluation of the process of Risk Management : Can Aibel improve their process of Risk Management?

aibel®

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This work is consistent as a part of the bachelor program in economic and administration at Høgskolen Stord/Haugesund and is approved. The approval does not imply that HSH answer to the methods that are used, the results that are emerge and the conclusions and complete evaluation in the work.

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Thank you

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Summary

Evaluation of Risk Management and risk process: “ *Can Aibel improve their process of Risk Management?*”

Risk Management is a control system to provide or reduce risk elements in an organisation. The system contains procedures and standards to follow, and our research is based on topics like communication, employee’s knowledge and internal processes at Aibel.

In-depth interviews among ten of Aibels current employees gave us thorough material to analyse towards theory including standards.

Our result describes an organisation that the majority of those that are involved in risk management are familiar and satisfied to the formal procedure that exists at Aibel, but there are rooms for improvements due to the process, procedure as well as the communication according to the internal system called Lotus Notes.

Table of contents

Thank you	3
Summary	4
Table of contents	5
1 Introduction	7
1.1 Evaluation of Aibel	8
1.2 Definitions	8
1.2.1 What is Risk:	8
1.2.2 Risk Management:	9
1.2.3 Risk Management process:	9
1.3 Choice of methods	9
1.3.1 Our research-questions:	10
2 Theory	11
2.1 Risk	11
2.1.1 Internal and External factors	11
2.1.2 Pure and Speculative Risk	12
2.1.3 Fundamental and Particular Risks	13
2.1.4 Cost Of Risk	14
2.1.5 Benefit	14
2.1.6 Levels of Risk	15
2.1.7 Context	15
2.1.8 Utility, Peril and Hazards	15
2.2 The Scope Of Risk Management	16
2.3 Risk Management Process	17
2.3.1 Risk Assessment	17
2.3.2 Risk Assessment Procedures	19
2.3.3 Plan for Continuity	20
2.3.4 Communication	20
2.4 Risk Management	21
2.5 Theoretical Summary	22
2.6 Standards	22
2.6.1 Scope	22
2.6.2 Policies and Elements	23
2.6.3 Planning for the Risk Management	23
2.6.4 Analyse Risk	24
2.6.5 Context	24
2.6.6 Risk Identification	24
2.6.7 Risk Estimation	24
2.6.8 Criteria and Risk Evaluation	25
2.6.9 Risk Treatment	25
2.6.10 Structure and administration	25
2.7 Conclusion	26
3 Methods	27
3.1 Research design	27
3.1.1 Cross-section inquiry	27
3.1.2 Case study design	28
3.1.3 Interview methods	28
3.1.4 Study of document	29
3.1.4 SWOT Analysis	30

3.1.5	Language.....	30
3.1.6	Validity and Reliability.....	31
4	Study of Aibel.....	32
4.1	Aibel.....	32
4.1.1	Location	33
4.1.2	Project	33
4.2	Aibels Risk Management.....	34
4.2.1	“Basic Procedure”	34
5	Analysis of interviews.....	39
5.1	The process of Risk Management.....	40
5.1.1	Does the Risk Management work?	43
5.1.2	Is there a formal guideline/ procedure?	45
5.1.3.	What are they using of the Basic procedure?.....	46
5.1.4.	Involvement of the process of Risk Management.....	47
5.2.	The communication within the organisation.....	50
5.2.1.	Lotus Notes as tool of communication	51
5.2.2.	Are new risks easy to capture?.....	53
5.3.	Improvements of Aibel’s Risk Management	54
5.4	Our research questions.....	56
5.4.1	Do Aibel have a formal, integrated risk management process?.....	56
5.4.2	To what extent are all workers involved in the risk management process?	56
5.4.3	How is the risk communicated between all participants in the project?	56
5.5	SWOT analysis and conclusion to the analysis	57
6.	Conclusion	59
	Literature:.....	61

1 Introduction

Most people are afraid of something, and there are a large number of people who say that flying in an aircraft scares them the most. Ironically they may smoke several cigarettes while driving their car to the airport, both of which are more dangerous activities than flying.

Statistics show that the number of accidents involving cars is considerably higher than those involving aircraft. ACRO (Aircraft Crashes Record Office: 2008) has registered 136 serious accidents with 965 fatalities in 2007, the lowest number for over 40 years (Acro's press lease in Geneva January 1st 2008).

Worldwide, around 1.2 million people are killed every year in car accidents. As many as 50 million are injured, and projections say that this number will increase by about 65 % if the roads don't improve (www.who.int 2008).

In view of these numbers, the risks we take daily are enormous compared to our perceptions of risk. But what do people mean by risk? They often assume that risk is some form of chance or uncertainty about an outcome in a given situation (The Chartered Insurance Institute 2004).

Society has a number of risks that may occur and we need to make prevention plans for them. It is important for companies to keep the level of risk it is exposed to as low as possible so that profits are not adversely affected.

Organisations can use risk management to reduce threats and exploit opportunities, which is important to survive in the business world. Risk management is one key method in controlling risk.

Aibel is a company, which works with projects every day, and within every project there are several risks. At the beginning of 2008 one of Aibel's projects is the platform Troll A; A contract signed with StatoilHydro to prepare and install new living quarter modules at the platform. The value of the contract is estimated to be 180 million USD (www.aibel.com; media press release from 02.01.08 a)).

1.1 Evaluation of Aibel

Given the growing interest in risk and risk management there is value in carrying out research to study to what extent organisations identify, evaluate and control risks. Research also shows how they monitor the success or failure of their systems. To explore this in depth, we have decided, with permission of Aibel, to analyse their systems of risk management and evaluate the effectiveness of these systems. Risk management is a wide area, so we concentrate our research on how the risk is being communicated within Aibel. Aibel is using the UK standard, and we will evaluate Aibels use of the standard and see if this is the best practice for the organisation. Risk management is an important process, and when we evaluate the process, it is critical that all the opportunities and threats are communicated to the correct areas of the organisation.

We have chosen risk communication as basis for our issue; to see if Aibel's risk process is communicated in the best way. We will look deeper into the whole aspect of risk implementation as well as the risk management process.

Our description to the problem:

Evaluation of the process of risk management: Can Aibel improve their process of risk management?

1.2 Definitions

With clear definitions the organisation has an agreement in the terminology related to the words that are being used. Below we have referred to some of the most common definitions.

1.2.1 What is Risk:

- *“...the combination of the probability of an event and its consequences”*
(Standards Japanese 2001:2;IRMIC/ALARM/IRM: 2004:2).

- *“The chance of something happening that will have an impact on objectives”*
(Standards Australia: 2004:4).

1.2.2 Risk Management:

- The UK standard (2004) tells us that risk management is increasingly recognised as being concerned with both negative and positive aspects of risk.
- The Australian Standard (2004:4) says: ” *The culture, processes and structures that are directed to worlds realizing potential opportunities whilst managing adverse effects*”.
- The Japanese Standard (2001:3) says: “*Coordinated activities to direct and control an organisation with regard to risk*”.

1.2.3 Risk Management process:

The systematic application of management policies, procedures and practice to the tasks of communicating, establishing the context, identifying, analyzing, evaluating, treating, monitoring and reviewing risk (Standards Australia 2004:5).

1.3 Choice of methods

With the help of in-depth interviews we hope to discover the weaknesses and strengths in Aibel’s risk management process, and this will be used in the analysis. Our in-depth interviews will be conducted with section leaders and members of project groups as well as the leader of the commercial side of the business. This will be done to bring a wide and insightful overview of Aibel’s risk management process. We will use a SWOT analyse to emphasize our conclusion.

In the first part, we will give a theoretical overview of risk management and its definitions, and the three standards (UK, Australian and the Japanese) will be described. Based on these standards and other theoretical books or academic journals, we will go deeper into the concepts of risk and risk management.

After the chapter on methods there will be a study of Aibel, where we describe Aibels risk management process and compare it to the UK standard. We will use internal reports and papers that we have obtained from Aibel. We will also utilise reports that Aibel have published, reports in the press and material from the internet. Interview of

Aibel's key personnel will also give us material. The risk management process at Aibel will be compared with the UK standard to see if Aibel is following the "best practice" in their organisation.

With the help of the UK standard we will see if Aibel has followed the standards guidelines and the answers will be based on our theory and research including in-depth interviews.

The main part of the thesis, the analysis, will contain interviews of employees at Aibel where we find out how their risk management processes are being practised at every level in the organisation. We will analyse theory against our findings.

1.3.1 Our research-questions:

- 1 Do Aibel have a formal, integrated risk management process?
- 2 To what extent are all workers involved in the risk management process?
- 3 How is the risk communicated between all participants in the project?

The final concluding section will be based on our findings from the above process. We will use standards, results of analysis and we will try to give Aibel an answer to whether their existing methods are consistent with the risk management process. We will also see if the risks are communicated well in Aibel or if their risk management process could be improved.

At the end of the thesis we will be summing up our findings and suggestion to Aibel, based on theoretical and empirical research.

In the following chapter, we will start by describing the theory including three standards of risk and risk management to give us knowledge of the existing research.

2 Theory

Communication (lat. *Communicare*): At Caplex`s website, communication is explained as to share with someone or inform somebody of something. With the help of communication we are on speaking terms and are able to give someone an understanding of our feelings or attitudes. When communicating risk, there must be a strategic plan as to how the risk is to be managed through the divisions in the organisation. Is the organisation (Aibel) convinced of and positively engaged in the risk management process, and do they communicate an unforeseen risk effectively? Let us first look at some theory to form a general overview.

Risk is uncertainty about the outcome in a given situation.
(The Chartered Insurance Institute 2004)

2.1 Risk

According to Waring and Glendon (1998) risk is treated negatively and most people use the word risk when they talk about things that may happen with negative outcomes. Risk is being used differently in various branches or sectors, and one example is the financial sector versus the government and the public sector. When we talk about risk in the public and government sector we understand risk as good or bad decisions, while investments can be the subject in financial business and may also give positive and negative outcomes.

2.1.1 Internal and External factors

Waring and Glendon (1998) focus on internal factors, which can be a part of the whole risk management process by reducing risk or, even better, avoiding risk. Risk can also turn into negative subjects, for example internal and external factors.

Internal factors such as employees, big changes in organisation and structure can be important when it comes to winning or losing for example tenders or other agreements.

External effects can be political events, changes in the world economy and regulations imposed by public agencies that the organisation does not have any control over.

These external factors have a profound effect and are critical factors in determining the success or otherwise of the organisation.

Many events may occur and some of them will be easier to predict than others, but most of them take place unexpectedly.

Waring and Glendon (1998:3) define risk management like this:

- *... as a field of activity seeking to eliminate, reduce and generally control pure risks...*
- *...to enhance the benefits and avoid detriment from speculative risks.*

Hazard, consequences, extent of hazard and probabilities are words that can be used in the risk management context. What can happen? What consequences will one simple event have on our organisation? Will an incident adversely affect our organisation or will we be able to take mitigate the effects easily? Are there any preventative actions we can undertake to reduce the risk? Unresolved hazards may develop ripple effect in the organisations. Lack of risk management can give significant increase in hazards, and that is why good communication in the organisation is important.

2.1.2 Pure and Speculative Risk

According to Waring and Glendon (1998) there are two main types of risk:

Pure risks are associated with hazards such as health, safety, environment and security where success with risk control can never be better than removal of the hazards so that exposure is zero and no harm can result, e.g. no accidents, zero product defects, no crimes (Waring and Glendon 1998:4).

Examples of pure risk are crime, accidents and non-tolerance risk. When the risk relate to safety, health and surroundings, zero exposure is aimed for. When pure risk is a subject, it really means unexpected events or accidents, which in a way are unpredictable. The catastrophe in Thailand on the 26th December in 2004 is an unfortunate example of a pure risk where approximately 220,000 people died because of the tsunami. An earthquake followed by the tsunami, affected countries all over the world both through direct effects and indirect effects such as tourism

www.evalueringstutvalget.no

The Chartered Insurance Institute (2004) point out that pure risk involves a situation of risk that may give loss, but it can also give a break-even situation. This means that the risk cannot give us something positive, only negative outcome or nothing at all.

Speculative risk are associated with business, finance, investments, human resources, IT strategy and politics where success is always relative to that economy as a whole, the market sector, competitors and the power attributes of others (Waring & Glendon 1998:4).

Speculative risk involves finance and investment as well as human resources. This type of risk is connected to activities and can be controlled, regulated or even eliminated by superior management. Here in Norway we are affected by the “ Terra-scandal” where local government have spent several millions NOK on bonds bought through Citibank to secure revenues for their city. The firm Terra Securities concealed relevant information, and it has become obvious that their advice was very wrong. The politicians went beyond their limits when they put their cities up for this kind of speculative risk. Haugesund is a community that has been affected by this Terra-scandal (www.e24.no).

Speculative risk can give us gain. By investing money it can give us something more in return than we spent. Investment can also give us loss or a break- even situation (The Chartered Insurance Institute (2004)).

2.1.3 Fundamental and Particular Risks

The tsunami in 2004 was also a result of a fundamental risk; risk not caused by people, but risks that appear from factors outside of any individual’s control and risks that affect many people at one time. Other examples are natural disasters like earthquake and volcanoes, and all of these incidents are often uninsurable on the free market. On the other hand, a particular risk is generally insurable, and affects individuals when they appear. For example there is fire, theft, motor accidents and work related injury (The Chartered Insurance Institute (2004)). If a fire happens in one H&M shop in Haugesund, it doesn’t affect other H&M shops in Oslo.

2.1.4 Cost Of Risk

Risk can be very expensive and may have a major impact on people and organisations. When we talk about risk being expensive, these costs are not necessarily pecuniary, but also human costs like suffering and pain as well as ethical and legal considerations. The Chartered Insurance Institute (2004) also mentions big events like 9/11 and the Chernobyl accident, which harm several thousand people, and was covered all over the world by the media. For example big headlines in television, radio as well as newspapers and weekly magazines. Everyone was talking about the events and the losses, but few thought about the daily loss traffic and due to hunger and sickness. An interesting point is that 9/11 encouraged more people to drive rather than fly. This extra road traffic would have resulted in more accidents and deaths than if they had just flown.

Like the authors say, these big media events are just the top of the iceberg, there is so much more risk to be considered. The twin towers in New York did, for example, had a very high damage potential because of the high population densities. Factors like that increase the level of exposure (The Chartered Insurance Institute 2004).

Most organisations don't know the extent of their insurance policy, and can be very surprised if an incident happens. There are several sizes of injuries, but it is often these big and fatal accidents we pay insurance for, but the small ones may cost the organisation the most in the long run. Hidden costs are also important to remember, and these are for example time, temporary employment, loss of business and equipment (Hood 2007).

2.1.5 Benefit

Risk also provides benefits due to development. Although it seems like risk always has a downside, it is so much more to it than that. For example there is growth and evolution in failing and learning, so that the future can bring better solutions and guidelines (The Chartered Insurance Institute (2004)).

2.1.6 Levels of Risk

The Chartered Insurance Institute (2004) also talks about severity and frequency when it comes to over- and underestimation regarding risk. An example can be the Tsunami again, which had a big impact in 2004 and took hundreds of thousands of lives.

Events like that have a low frequency but high severity, which means that they occur rarely and affect many.

If we turn this around, there are accidents with low severity and a high frequency and car accidents worldwide is an example of that. As we mentioned in the introduction there are about 1.2 million deaths in different car accidents every year. One incident may affect few people but in the whole perspective there are many accidents every day, even every hour.

2.1.7 Context

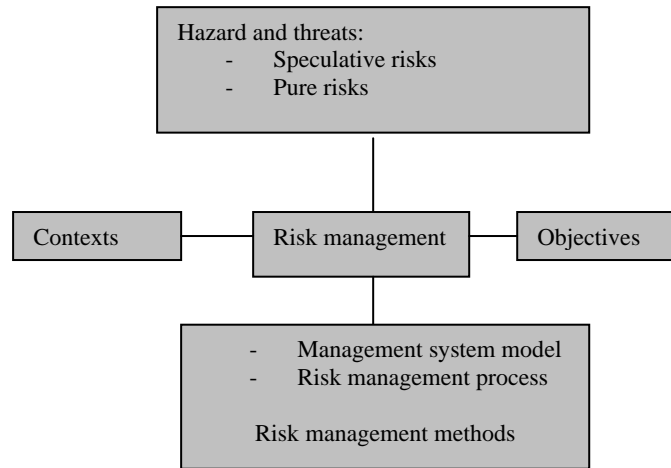
Waring and Glendon (1998) talk about context or surroundings in two ways, the inner context and the outer context. The inner context involves structure, culture, strategy and resources among other things, while the outer context sustains the organisation's environment. By environment they mean economies and markets, public policies, standards and regulations as well as climate (social, historical and political).

2.1.8 Utility, Peril and Hazards

Utility represents the meaning of probability of loss and what it may cost if it happens. The Chartered Insurance Institute (2004) indicates that the value of a risk situation is calculated based upon the possibility of the event and what loss occurs if it does manifest. They also point out the difference between the event and the damage caused by it. It isn't always the event that is the hazard, but the circumstances or conditions around it. The thing, which is the start of an event, is often called peril and is the prime cause of the loss, while the hazard is the outcome of an event.

2.2 The Scope Of Risk Management

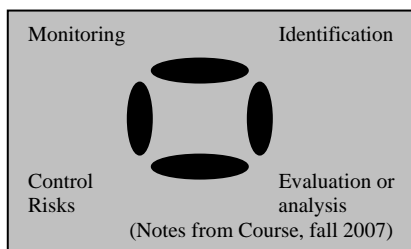
Waring and Glendon (1998:5) have made a figure, which gives us a simplified understanding of the scope of risk management:



Political risks can lead to war and demonstrations that unfortunately might take lives. Speculative risk management is therefore gambling that can result in success or loss. It isn't always these big catastrophes that harm organisations most, but several small incidents that could have been avoided. By eliminating and controlling risk, organisations can save money and time by working against risk and by awareness of risk elements.

The Chartered Insurance Institute (2004) has, in addition to the risks described earlier, two other classifications of risk, which is financial and non-financial risk. The financial risk is concerned with more than just money market, it also means measuring losses and injuries.

An organisation's reputation can be harmed by bad publicity as well as the wrong choice of partner or employees. The non-financial risk can't be measured in financial terms, but concern personal decisions i.e. career selection and choice of marriage partner.



2.3 Risk Management Process

To begin a risk management process there are factors that may be important not to overlook. Hazards or threats must be identified and analysed in terms of their consequences.

Four principal steps can be employed to carry out a risk assessment according to Waring and Glendon (1998):

- Risk Estimation: The risk is measured.
- Risk Evaluation: The extent of risk is made.
- Risk Decisions: The risk is measured up against criteria to find acceptance or not.
- Risk Strategy/action: Decide what strategy or what combination can be used.

When we talk about risk strategy there are three types to be aware of:

- Strategic risk refers to the organisation's corporate and business strategy and how to survive through an event that concerns risk.
- An approach through risk management and risk itself.
- Activities in risk management that concern a high level inside the organisation.

Strategies may turn out differently, and some decisions can be to avoid projects or activities that might concern some forms of risk. Other strategies can be to postpone decisions, reduce activities to maintain a low level of risk, and share risks through joint ventures¹, to mention some. A combination is also an opportunity when it comes to strategy (Waring and Glendon (1998)).

2.3.1 Risk Assessment

Risk assessment can be used to describe the organisation's task when it comes to defining different risks and hazards, and where they can turn threats into opportunities. It is a process that requires attention from the whole organisation. To be as good as possible in risk management, the senior management in the organisation must be interested and active in this process. The aim of risk assessment is to find out

¹ Joint venture: Is a legal agreement that is pursued/driven between two parts/organisations (www.regjeringen.no).

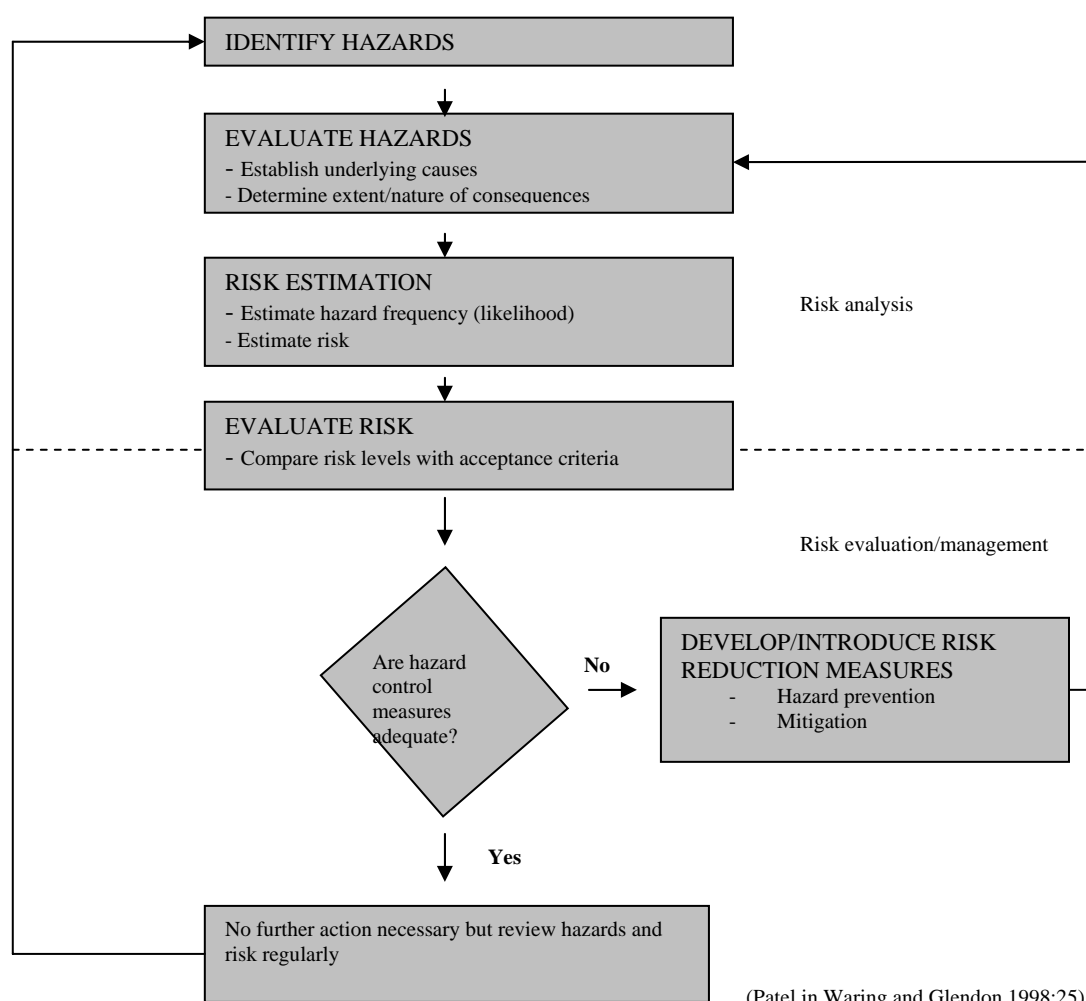
as much as possible about the risks that may occur, and Waring and Glendon (1998:21) describe risk assessment like this:

...risk assessment adopts an analytical approach to uncertainty and a rationalistic methodology has arisen...

The outcome of an event or a situation can turn out differently, and the consequences of these outcomes are described in this part of risk management. Aibel has signed a contract to build further modules to the platform Troll A. With this agreement follows several kinds of risk events. There may be problem with delays when it comes to ordering products, strikes among employees, the productivity of labour or short of labour could be lower than estimated and so on. It is important to recognise that risk assessment is a part of the method of managing risk and it's intended to maximise risk control (Hood 2007).

2.3.2 Risk Assessment Procedures

The avoidance, reduction and improvement as well as the control of risks are the subjects in risk assessment, and to make decisions, which give the organisation the best possible outcome. A method to use can be Patel's figure from 1994, which gives us a over view of the most important issues in risk assessment:



Risk assessment seeks answers to questions like likelihood, severity, nature and degree of risk among others. What can be done to reduce or mitigate risk? Can we eliminate the risk we find in our organisation? The assessment is a continuous process so that risk and uncertainty are being monitored at all times. The sequence that the figure shows, gives us guidelines to search for and treat risk from simple approaches to more complex and quantified techniques (Ibid.).

Jacqueline Jaynes (2002) agrees with these principles of risk assessments and point out the importance of being simple and logical in the process. If not, there can be much confusion resulting in a lot of paperwork and less clearly defined targets. A list containing the following should be carried out:

- The extent of risk must be identified beforehand
- The full range of potential risk factors or hazards should be considered
- Everyone knows what these hazards are, which control measures have been undertaken and how to use them
- Sufficient monitoring and review
- Be able to see that risk are being managed appropriately

Jeynes (2002) also indicates the ten principles as an important part of risk management. They are split into four main groups which all impact on each other:

- 1 Physical properties: premises, product and purchasing supplies
- 2 People elements: people, procedures and protection
- 3 Action or process: processes or performance against targets
- 4 Management issues: policy and strategy, planning and organizing

2.3.3 Plan for Continuity

There is always a chance for crises, and an organisation must be prepared to deal with them using an emergency plan. In order to do so a risk recovery plan must be developed to minimise any negative effects or at least minimise the risk (Hood 2007).

2.3.4 Communication

Communication is an important part of this process, and there is no co-operation without communication. Hazards and precautions must be communicated at all levels of the workplace, and it's also useful to organise a committee or a representative. The aim of communication is to identify risk in all levels of the organisation so they can take preventative action (Hood 2007).

Def: Risk Management:
"The culture, processes and structure that are directed towards effective management of potential opportunities and adverse effects"
(AS/NZS 4360:1999 S.1.3.25)

2.4 Risk Management

According to Waring and Glendon (1998), risk control and risk management can often be compared to each other. But risk control is an important part of risk management and there has been an increase in public awareness of risk and hazards, especially due to media attention. It is

wise to use risk benefit analyses to find acceptable middle courses between risk and its advantages.

Strategic Risk Management:

Strategic risk management seeks a holistic approach to risks, both pure and speculative, which involve significant hazards or threats to an organisation, enterprise or political entity (Waring and Mehdiadeh (1996) in Waring and Glendon (1998:14)).

When it comes to strategy there is both pure risk and speculative risk involved. If we use the tsunami again as an example, we can see that these two risks interact with each other. If the government had decided at that point, to use a good tsunami-warning system, maybe thousands of lives would have been saved. Even though the tsunami is a pure risk, The Chartered Insurance Institute (2004) sees the tsunami as a fundamental risk as well as speculative. The point is that the huge human loss could have been avoided if the speculative risk were treated differently.

Strategic risks are risks containing several areas that can be hard or difficult to deal with. It could be foreign countries' culture and laws that can cause the organisation problems if they aren't aware of it. Foreign language and different expectations can also be challenges to be aware of in dealing with risk.

When looking at pure risk, there can be trouble with foreign safety (for example corruption and terrorism). Pure risk can also environment with laws and standards that we don't have knowledge about. Liability and hazards due to health and transport are also important issues. The speculative risk involves prices (fuel, product), competition with foreign companies, instability and policy to mention some (The

Chartered Insurance Institute (2004).).

2.5 Theoretical Summary

Risk and risk management are important according to the critical outcome if it doesn't get treated properly. By that it means overlooking facts or events that might cause much damage. Risk is divided into several kinds of characteristics, and each of them has their own qualities. While there are several types of literature and articles about this subject, there is a smaller collection of standards. Standards provide guidelines for organisations to manage risk with.

ISO: International Organization for Standardization; developed standards since 1947.

(www.standard.no)

2.6 Standards

Standards exist in several areas and are used in many different situations within modern society.

They surround us in the daily routine without consideration or thought. Standards describe

important processes and aspects, and they suggest choice of alternatives. Some authorities may demand that standards are used, but often they are voluntary. Interest groups and major risk management organisations that want common ground rules have prepared the standards. Standards will help promote national competitiveness, and are suitable for the organisation to purpose and secure products and processes

(www.standard.no).

2.6.1 Scope

The three standards Japanese, Australian and UK agree that their purpose is to find a balance between realizing opportunities for gains and to minimize losses. Standards are guides to managing risk within their activities, operations and decisions and will give a more certain and precise management. Standard Australia is very precise in its scope:

Organisations shall be pro-active and not re-active and try to be more effective in their allocation and use of resources.

The stakeholders' faith and confidence shall be maintained as well as improving the standards of corporate governance. The standard is also trying to gain value by removing insecurity and unpredictability. Standard Japanese shall provide principles

and fundamentals so organisations can establish good systems. Standard UK emphasises the importance of up- and downsides, and that risk management can be used for any activity, either short or long.

2.6.2 Policies and Elements

Standard Japanese has a risk management policy that shall establish, observe and complete risk elements. It is important that top management establishes and includes the rest of the organisation, often in writing. A guide must be made to link up factors with each other, i.e. social contribution, health and safety protections and prevents and implementation of actions of realisation. Standard Australia has called theirs “communicate and consult”, and encourage organisations to increase communication strategy or plans with their stakeholders. The process must include both internal and external stakeholders in early stages, and with their help, the organisation can understand the reasons according to decisions that are made.

The organisation, as well as stakeholders, must understand each other and their perceptions. A team can be put together to ensure effectiveness and give benefits of control treatment with risk management. Standard UK likes their policy to be an approach to risk management, and use the whole organisation as a responsible business process. For effectiveness there should be a commitment from the leadership, responsibility and resources for training and development. Standard UK is also focusing on involvement from the to management:

It must be integrated into the culture of the organisation with an effective policy and a programme led by the most senior management.

2.6.3 Planning for the Risk Management

To use risk management there must be a plan to implement the policy i.e. risk finding, risk identification and risk estimation. Other factors in Standard UK and Standard Japanese are risk evaluation, target setting, selecting and establishing of such programme. Standard Australia requires resources for analysing and the organisation must be clear about the process and its roles and responsibilities. By that it means to specify decisions to get a clear understanding on which activities to include or exclude for reducing risk.

2.6.4 Analyse Risk

Analysing risk is done to get an understanding of threats and opportunities. Standard Australia gives us an overview of what is needed to have an adequate analysis. We have to look at consequences, both positive and negative and the likelihood and frequency. Control of processes should be done to see where risk has been minimised before. Standard Japanese also point out the sensitivity to risk and that it is important to eliminate preconception or biases inside as well as outside the organisation.

2.6.5 Context

The internal and external environments are important to look at when establishing critical risks. Internal factors give an understanding of the organisation, like culture, resources, goals and objectives that occur inside. A good insight helps in achieving targets and intentions. There are a link between external environments and the organisations stakeholders. Standard Australia also point out the importance of considering the stakeholders perspectives so that external threats and opportunities can be analysed.

2.6.6 Risk Identification

Standard Japanese indicate that identifying risk has to be done with respect to those factors that have several effects as well as potential damage and which are difficult to determine. Weaknesses and vulnerabilities must be examined together with past experience and similar risks in other organisations. Brainstorming, interviews and questionnaires of organisation members together with external consulting are methods to use. Standard Australia and Standard UK agree in methods to identify risk, and also point to checklists, system analysis, scenario analysis as well as systems engineering techniques to find the organisation's risks. Standard UK's definition of identification is the exposure to uncertainty and that knowledge is the key to better risk management.

2.6.7 Risk Estimation

The purpose of Risk estimation is to estimate the possibility and potential consequences for use as assistance in evaluating risks. The estimation is divided

quantitatively and qualitatively. Quantitatively obtain numerical data to indicate possibility and consequences, and are descriptive, while qualitatively is ranking and rating to indicate probability and consequences.

There is also semi-quantitative, which is value to ranking scale of risk, and can only be used where there is limitation. A test to see the effect of uncertainties about hypothesis and data collections is also needed, because of vague estimates. To do so, there is a sensitivity analysis that also test controls and risk treatment options.

2.6.8 Criteria and Risk Evaluation

Evaluating is the key word when it comes to identifying risk, and there must be a context between all kinds of risk that may occur. By that it means e.g. stakeholders, objectives, policy and goals for the organisation. When evaluating, we have to create criteria for each identified risk, and compare these with estimated results. New action or priority must be clarified and documented to every risk changes.

All the three standards agree with this process, but Standard UK also mention associated costs as an important element in this procedure.

2.6.9 Risk Treatment

Standard Japanese say that treatment is about avoiding, transferring, reducing and retaining of risk. A plan for each activity should be made as well as emergency measures taken immediately after realisation. Standard Australia is focuses on the range of options for risk treatment and how to consider preparing and implementing plans for treatment. Positive outcomes as well as negative outcomes give room for seeking opportunities to reduce likelihood. One option is to consider the costs of implementation against the benefits. Standard UK is very precise in their risk treatment, and includes risk control and mitigation as a tool for treatment. Minimum providing, effectiveness and internal control measures are subjects for selecting and implementing measures to modify risk.

2.6.10 Structure and administration

Standard UK and Standard Australia gives advice and guidance to the structure and administration of risk management. They don't give specific directions, but rather

suggestions to on how to implement and mitigate risk management as well as how to continue pursuit of the implementation.

Standard Japanese has more direct rules of procedures, which give us a better structure of the organisation. They have rules for management leaders, groups and employees as well as the whole organisation. There are some aspects they refer to as “should”, but most of the standard is guidelines to follow.

2.7 Conclusion

Theory and Standards may be two different things, but for organisations that will use risk management as an important tool for surviving and achieving, both literatures are very informative when considered together. While the theory teach us fundamental risk management, Standards will give us guidelines prepared by experienced people that work or have worked with managing risk and who know the importance of having these Standards to follow. The Standards are trying to provide a framework for organisations to develop and implement a risk system, and the management of these risks (Standard Japanese 2001).

When risk management procedures are implemented in an organisation, the communication between corporate management and all employees is a key factor for succeeding. In chapter 4, we will look at Aibel and their risk procedures, and compare their procedure against the UK Standard. At first we will write about methods to use and our decisions due to this thesis layout and contain.

"Methods are systematically ways to search the actuality"

(Halvorsen 2003:13)

3 Methods

If we look at Caplex`s internet page they describe the word methods (gr. *methods* to *hodos*) to be systematic techniques to solve a problem, or to achieve a result etc. In order to accomplish research there are a lot of considerations and choices to make. For example, what, who and how the investigation will be carried out. We will start by looking at some of the remedies to use in the analysis.

3.1 Research design

Johannessen et al. (2006) says that research design is everything that concerns a study. The design begins with an idea and continues until the product is completed. You may also say that it starts with the research questions and considers the options to complete the investigation from the start to the finished product. One criterion is the time of the research; is it a one-time phenomenon or will the research be done over a long period?

3.1.1 Cross-section inquiry

Johannessen et al. (2006) explain that a cross-section study is when we choose to take the research on one time frame, but over considerable time, for example over several weeks. This will give information about variation; the interviewees life cycles and where they lives etc. The research can also give information about the circumstance between phenomena. In our research project we would like to do studies over several time frames, but time pressure set confined us to only one research period. It is recommended however to use different time levels for more precise answers.

Research is used to analyse and evaluate a phenomenon or an event. People carry out research as part of their every day lives, but this academic research more robust standards are needed.

3.1.2 Case study design

The case study is one of the research designs that often are used to study events thoroughly. This form of design requires one or several cases to be analysed in details. Johannessen et.al (2006) also explain that a case study is used to gather as much information as possible about a restricted event. With help of a qualitative approach, we can use interviews as a method.

Interviews are being used to gather information with help of an interview subject that tells us a story or answer those question that are asked.

Interview for use in research are defined at Britannica online as:

Face-to-face contact between an interviewer and interviewee is directed toward eliciting information that may be relevant to particular practical applications under general study or to those personality theories (or hypotheses) being investigated.

Qualitative interviews are used in structured conversations and have a purpose. The interviewer asks questions, and follows through based on the answers he gets.

3.1.3 Interview methods

We have chosen to use in-depth interviews in our thesis to get more accurate answers to our research questions. To give a strong foundation to our thesis we have interviewed ten people inside Aibel's organisation, all of which work in the division of Estimation and Risk Management.

We choose to limit our thesis to a single case study of Aibel. Within Aibel, we focused on the Estimation and Risk Management Group. This allowed us to explore the issues and problems surrounding risk with the people who have an active involvement with it. A more extensive project could have involved a study of organisations similar to Aibel, but such a project was not practical with the time and resources that we had.

We have also considered questionnaires, but after discussing this with our supervisor we agreed that this would not give us as much input as wanted. Questionnaires take a long time to design and typically have a very poor response rate with only 15-20 % of questionnaires completed and returned. Without a large sample size of the participations, this method would not give robust results.

3.1.4 Study of document

To be able to properly analyse the interviews, we found it necessary to produce a transcription of each interview. The reason was to gain an overview of the findings at each interview and to sort out any similarities or dissimilarities. We had ten interviews that lasted between 40 to 60 minutes each, so the transcription process was time-consuming. But it gave us the benefit of looking at papers to analyse instead of listening to every interview on tape all over again. The transcripts were very useful when discussing and analysing the interviews.

There is much information about interviews, but we will continue to look at advantages and disadvantages of the method being used:

Advantages:

With in-depth interviews we get a connection to the interview subject and get a feeling about Aibel as an organisation. This is important because of the overview and our improved understanding of their routine and strategies.

We will also get real impressions on what our interviewees really mean. A smile, tears or a blink can give the interview a lot more meaning, even the body language says more than words sometimes.

In addition we are allowed to speak with a group of different people and can change the questions to fit each interviewee.

Disadvantages:

Aibel has a large number of workers, and with help from Asbjørn Nesse, we got a list of people to interview. After a round or two with interviews we understood that we also needed to interview some one from the head leaders at Aibel.

To make a fair reproduction of our interviews was time-consuming. It is possible that the quotes presented in this thesis will not be completely accurate as the interviews are in Norwegian and during the translation will then be under the influence of our interpretation of what has been said.

There might be small doubts to how truthful the interviews are. Some can be afraid to tell about their true feelings, knowing that the management are interested in their answers.

Lack of authorization to use quotes in analysis from the interviewees, was an issue that occurred. But the interviewees were kind enough to approve any recognition that could appear.

3.1.4 SWOT Analysis

Based on analysis of the interviews we will present a SWOT- analysis of the strengths, weaknesses, opportunities and threats that we have categorised. The UK standard also recommends a SWOT analysis because of its convenience.

Roos et al. (2005) describe the SWOT analysis to be a method that is easy to understand and user- friendly to summarise both internal and external factors at an organisation. The authors also point out interviews as a tool when performing a SWOT analysis.

We will not use this analyse to find out about the organisation's strategy, but how and where the risk management at Aibel has its strengths and weaknesses.

In this section we have in addition to present a theoretical foundation for methods, show which method we have used, and how we have collected our data. Afterwards we have described, explained and looked at positive and negative effects about our choice of analysis tools. In our next section will we look further at our data collections and find answers to our research questions.

3.1.5 Language

Due to English being our foreign language there might be issues with sentence structure. We may think that our meaning is entirely clear while readers can arrive at another interpretation from what we had intended.

3.1.6 Validity and Reliability

With regard to the research validity there is a small doubt to how correctly the answers at the interviews are translated by us. Due to quoting in English as our foreign language, there might be misunderstandings of words and the meaning of them. We have tried to be as impartial as possible in analysing the interviews. It would be recommended that the research is performed again to make the analysis even more valid, when comparing the findings.

When using face-to-face interviews instead of anonymous questionnaire, there might be omissions in answers from the interviewees, because of sensitive problems or expressed opinions.

The research is reliable due to the number of interviews conducted at the organisation. It might be useful to do interviews again as well as questionnaires to give the analysis even better thoroughness. Another possible strategy might be triangulation as a method as well.

We will now begin to evaluate Aibel.

AIBELS CORE VALUES:

They care about

- Their customers
- Their colleagues
- Their stakeholders
- The society

4 Study of Aibel

Aibel's vision is to be a leading organisation within the oil and gas industry, and with this vision their goal is to contribute to customers achievements of better production based on world-class quality, EHS

(Environment, Health and Safety), and ethical standards. A program called "We care" is a central part of their culture and values, and by continuing this program Aibel employees are encouraged to work openly, ethically, and cooperatively with each other, their customers, their owners and society (Information read on Aibels hand out from the information desk). To be able to study Aibel in a comprehensive way, we need to know a little bit more about the organisation.

4.1 Aibel

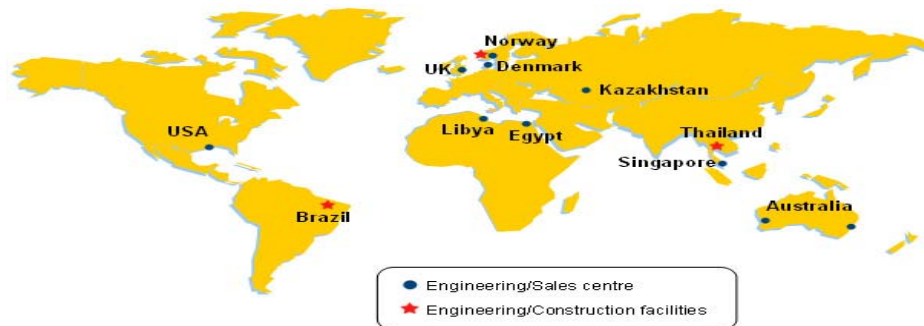
Aibel is a global organisation that is a leading provider of technology, products and services to the oil and gas industry. They are a multicultural organisation with over 7000 employees, an annual turnover of NOK 9 billion and over 100 years of experience. Aibel has a reputation for being innovative, flexible and operationally effective, and their dedication to meet their customers' needs is matched by their own commitment to safety, reliability as well as environmental sustainability

(A. Nesse (2008) & www.aibel.com c).

Aibel supplies:

- Production facilities
- Processing plant
- Technology and products
- Maintenance/servicing and modification of on/offshore installations
- Management of production plant

4.1.1 Location



(www.aibel.no)

Aibel has operations worldwide; with headquarter in London, UK. In Norway Aibel operates in Billingstad, Bergen, Hammerfest, Haugesund, Kristiansund, Stavanger and Trondheim.

Ferd Private Equity Fund II is the owner of Aibel, and it's a leading Norwegian private equity fund owned by Johan H Andresen (www.tu.no).



4.1.2 Project

An example of a project that Aibel has finished is FPSO Alvheim, the huge oil production and storage ship, which was a former multi-purpose tanker. "MST Berge Odin" was converted in 2006 at Keppel

shipyard in Singapore, and was modified in Haugesund, from March 2006 until February 2008, before it started its tasks on the Alvheim field in the North Sea.

(www.haugalandet.net) This ship has given the region useful revenues and great economic ripple effects, with its 2000 workers, from inland and abroad, and approximately 5 million working hours (www.h-avis.no).

One of Aibel's current projects is HiLoad DP, which is a contract with Remora ASA, to build a prototype of a new vessel intended for the offshore loading of oil and gas. In Aibel's press release in August 2006 the vessel is described like this:

The vessel, named HiLoad DP has a unique L-shaped floating docking and offloading terminal that can be equipped with diesel engines and a position-keeping system and is able to facilitate offshore loading with non-specialised regular trading tankers, worldwide and can operate at any oil field and water depth (www.aibel.com b)).

4.2 Aibels Risk Management

An organisation like Aibel, considering their amount of turnover and number of employees, has a high level responsibility and a high level of expectations to achieve good results. To generate profit and to be a successful organisation there is several factors to consider, and one of them is risk management, which involves the entire organisation. We will now look at Aibel's Basic Procedure on Risk Management with measures to the UK standard.

4.2.1 “Basic Procedure”

There is made a “Basic Procedure”, written by Asbjørn Nesse, leader of estimation and risk management at Aibel in Haugesund. We quote from page 2:

...to describe the project risk management process (RMP) in all project phases and secure that it is a core process in any project in Aibel M&M.

The basic element in this paper is the process of how to manage risk, and it covers the responsibilities to the project/tender manager, risk manager coordinator and the department/discipline manager as well as project personnel. All of their tasks are identified and especially the communication between all divisions or personnel is pointed out as an important activity according to new risk elements.

Aibels method is based on PRAM² (Project Risk Analysis Management), and includes the phase's identification, experience transfer, maturity evaluation, risk quantification, risk modelling and simulation, risk monitoring and control. The modelling and monitoring phases are produced in MS Excel (electrical), while Lotus Notes Database is used in the project execution phase. Standard UK is also ranking the process in a similar way, and gives the organisation and its stakeholder's value

² PRAM is Aibels project Risk Analysis and Management.

through providing a framework. A structure like this gives Aibel the benefit of understanding, improving and prioritising activities. Aibel's PRAM is easy to follow and can be used by every department in the organisation. By describing every employee's responsibilities in risk management, Aibel are reducing their exposure to misunderstanding or exclusion of tasks.

One issue to consider could be to define the method more precisely, but this may be done in the PRAM, without our knowledge. This approach may reduce the workload, and improve the image of management for the employees.

There is a "Project risk exposure report", generated from the PRAM, which describes the risk exposure in all different phases of the project. A list is developed for guiding risk decision and providing better solutions. The report is very clear with good outlines on threats, and risk itself. The risk is categorised with name and priority as well as a mitigation plan. Guidelines to follow are understandable and give Aibel a good overview of possible risks on each project they give tender to.

The risk management coordinator has the main commission to emphasize the development and implementation of the risk management process, while the tender/project manager shall ensure that it is done.

All the groups' tasks are being identified with an agenda to follow.

Again the importance of bringing information further to each discipline is mentioned, and approaching like brainstorming and interviews are techniques to use. A register shall include described risk elements as well as an evaluation of design maturity.

Standard UK describes a risk estimation, which Aibel follows to a point by dividing positive and negative consequences (opportunities and threats) into high, medium and low categories. Aibels structure is easy to understand, and by describing activities and their norms, they have framed a good and reflected guideline. In the brainstorming session the employees are encouraged to be positive and unrestricted, which gives a safe environments for expressing and sharing ideas.

When it comes to quantity, interview with engineers shall be used in all departments to define levels of uncertainty, and subcontractors and suppliers must be given special attention. This procedure seems very useful and informative, and involves important

participants in a project. The possibility to resolve difficulties seems to be a good outcome from this sort of identification process. It depends on the interviewers to make the results as precise as possible; they must be aware of risk management and know how to use “the basic procedure”.

Qualitative and quantitative risk analyses have methods to be used for estimating, and identifying possible mitigation plans to reduce risk effects. Evaluation of each risk element can be ranked, prioritised and valued based on the severity, probability and consequences. This gives Aibel a structured view of actions to manage. These three factors have their own scale for occurrence, and a value is being estimated for each of them to see if there are high priority elements or not. A guideline shall also be made for priority levels to divide them into high, medium and low priority, to find out the ranking of risk priorities.

By using schematic tables for estimating consequences and probabilities, it gives Aibel a structured and easy-to-read evaluation. This kind of analysis is reminiscent of SWOT analysis that Standard UK standard point out as an example of risk analysis methods and techniques.

When it comes to aspects of risk, we can use SWOT to analyse the organisations strengths, weaknesses, opportunities and threats in order to be more prepared and enlightened for risk factors/factors of risk. Due to analyses like this, we will be aware of the company’s internal recourses and external environments (Roos, G. et al: 2005.).

Standard UK list several examples for risk identification and risk analysis that Aibel can consider using in their risk management. It may not be necessary to use all of these techniques, but some of them are worth considering for one project and another technique may be useful in another assignment.

RBS stands for Risk Breakdown Structure, and this is based on the “Successive Principle³” and ought to contain preliminaries, engineering, procurement, construction, marine operations, installation and commissioning. The estimate is calculated by cumulative (single tail) probabilities of the normal probability distribution.

³ Successive Principle (Lichtenberg’s procedure), is an analysis that starts with a limited number of activities and then adds the model. The model works by decomposing the most uncertain aspects into more detail.

Planning, controlling and monitoring are important issues to follow as well as giving special attention to elements like political, commercial, financial and cultural risks. As Aibel's procedure does, the Standard UK agrees in using external environment as an important factor in analysing risk. This procedure resembles PESTLE⁴, which is one of many good methods to use when analysing a company, and gives Aibel important facts about challenges that can arise.

Aibel's "Basic Procedure" seems like a very good and comprehensive guideline for the organisations employees to use in risk management. It is a guideline that is not exhaustive, so that the participants can expand their techniques and methods to make the analysis and management as good as possible. The procedure is also similar to Patel's figure in Warning and Glendon (1998:25), which gives us an overview of a risk assessment procedure.

One of the highlights in the procedure is the focus on eliminating criticism. The project members are not allowed to give negative responses to any suggestions that may occur in a project. This may give a satisfied and confident group of employees that makes the risk management work easier.

Our thesis contains three research questions. When we look at question one: If Aibel have a formal integrated risk management process, it seems that they have a formal process. According to next question, where we are trying to find out if all workers are involved in the risk management process, it is written in the procedure that they should be. The last question is about communication between all participants in the project. The Basic procedure gives a structured guideline for responsibility inside a project.

According to the theory, there are positive answers to all of our research questions. But to link theory and practice together, we have to explore these questions further.

There is no point having a well-done and reflected procedure if it isn't implemented correctly. To find out if Aibel is using risk management in the best possible way, we will use interviews to find answers to our research questions.

⁴ PESTLE stands for Political, Economic, Social, Technical, Legal and Environmental (Standard UK). It is a method that studies the organisations macro economical relationships.

By using interview of Aibel's employees at different levels in the organisation we will try to form a general view of how successful the implementation of risk management has been, and where changes can be made to improve the management of risk within the organisation.

In the next chapter we will look further at our data collection process and analyse answers against theory and standards.

**” Busy work day contain
prioritisations, and risk
management is a good way to
prioritise...”**
(Quoted by the leader of commercial)

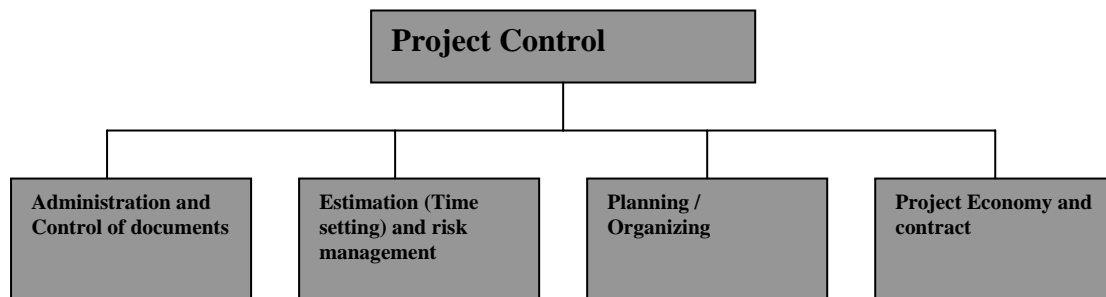
5 Analysis of interviews

We have interviewed a total of 10 person at Aibel that work at the department of estimation and risk management. Some of these people are leaders of project control and leaders of division; others are engineering a project or are risk coordinators. We also interviewed leaders above their tasks to see if their points of view are dissimilar or related, and where any differences might be. We also tried to find proposals for improvements among interviewees.

The interviewee’s responsibility involves all tasks in a project, from making a tender to complete a project as well as monitoring and produce better systems and procedures. Their work experience varies from a couple of years to approximately 30 years.

A project team change from project to project, and their answers are based on experience from different projects and careers.

One of the interviewees drew this organisation chart:



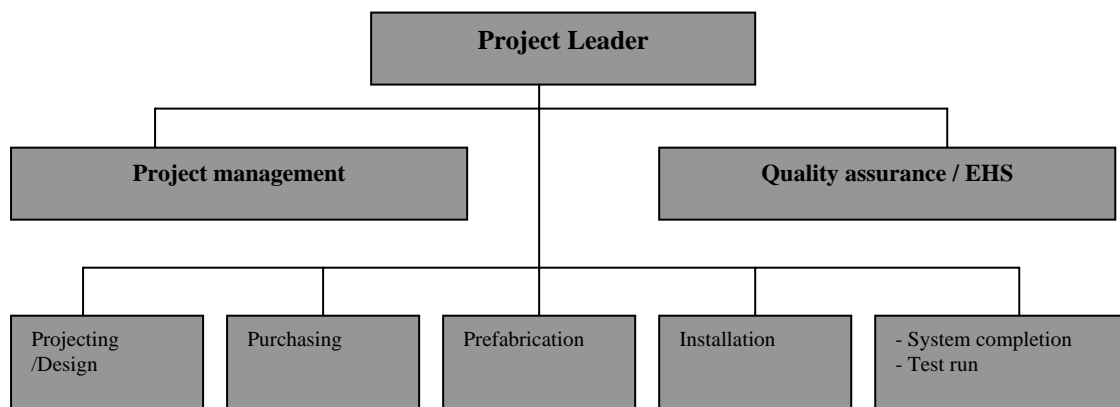
At the division for estimation and risk management there is a base and project workers. One of the engineers said:

At the start of each project there is established a start-up meeting or kick-up meeting that contains information about the risk process and how to discover risk elements by brainstorming among other things.

There shall be a risk register in every monthly report with specification of the top ten risks. As written in the basic procedure there action is taken with regard to the highest risks by assigning a responsible person to each risk with deadlines to follow.

Patel in Waring & Glendon (1998) said that the first step in Risk Assessment Procedure is to identify hazards. Jacqueline Jeynes (2002) has a list on what to carry out, and remark the following: “*The extent of risk must be identified before hand*”. After the standards we need a plan for risk finding, risk identification and risk estimation, and Aibel is following these directions.

“*A project team includes different tasks, and normally it looks like this:*” (drawn by one of the project leaders):



5.1 The process of Risk Management

Risk Management is used as an important tool for estimating and preparation of tenders at Aibel. The organisation works mainly with projects and they have different project teams at any time. A project can contain 6 or 7 people but may also become much larger than that depending on the size of the project. To become an effective and reliable supplier of technology, products and services to the oil and gas business, there must be a structured and adapted system or guideline to use in this matter. In our study of Aibel, we have discovered that they are using the UK standard, as well as developing their own procedure based on this standard. Waring and Glendon (1998) mention four principal steps: “risk estimation, risk evaluation, risk decisions and risk strategy/action”. Aibel’s Basic Procedure follows these steps as well as Aibel’s employees with their involvement of Lotus Notes. The best tender wins, and to be that organisation it is important not to overlook any feasible moments that can case delays or over cost overruns on the project. Waring and Glendon mention: “*Risk can be*

highly expensive and may have major impact on people and organisations". There are many threats, as described in Waring & Glendon (1998) and The Chartered Insurance Institute (2004), and possibilities connected to projects, and by being prepared to deal with any risk that may come along, the chance to win a tender and give the organisation profit is very good.

Aibel are using both tender and framework agreements in their projects. We quote from one of the interviewees:

By using framework agreement there are prepared a fundamental contract with each customer for reducing tender periods, which cost money and time for involved parts.

Aibel's risks include both internal and external risks (see Waring and Glendon (1998) and the Standards), and Aibel see the importance of being clear in their search for undesirable or unwanted elements. Aibel's largest internal risk is a speculative risk, according to Waring and Glendon (1998). Some of the interviewees mention lack of resources as one of the largest internal risk. The world economy is also strong at the present time (when the research was carried out) and gives Aibel the benefit to make good projects. Even if the economy is good, there is risk taken by estimating tenders that may turn out to be more expensive than already predicted. But luckily Aibel's projects can turn out to give more in return than estimated as well.

EHS (Environment, health and safety) is also one of Aibel's largest risks and is a pure risk, defined by Waring and Glendon 1998. The risk at Aibel is continually under supervision by making regulations to prevent even the smallest accidents. From a lecture (2007) by Dr. John Hood we learned that "*There is always a chance for crises, and the organisation must be prepared to deal with them with help of an emergency plan*" and Aibel have seen the importance of this. The standards have also seen the value: "*A plan for each activity should be made as well as emergency measures taken immediately after realisation*".

Severity and frequency are keywords in this type of risk (see The Chartered Insurance Institute 2004 and The standards), because a small accident at the engineering workshop may only affect the person who is harmed, but those accidents occurs often

and gives Aibel a high frequency. The Chartered Insurance Institute (2004) said: “*Talk about severity and frequency when it comes to over – and underestimation of risk*”. The standard also sees that and give guidance to look at consequences with the help of likelihood and frequency. A large industrial accident happens hardly ever, but when it does, Aibel can be harmed enormously and thereby it has a low frequency and high severity. These elements mentioned above and in Waring and Glendon (1998) are generally particular risks, but there might be fundamental risks that occur as well. Out in the North Sea there can be very bad weather and platforms can be harmed and result in catastrophically bad outcomes. That may rarely happen, it is more likely that a human mistake can result in a bad outcome. As one of the engineers remarked: “*There are some risks that are alive at all time, and that’s EHS*”. Aibel do use quantitative estimation, but there are many statements according to the interviews that this is too difficult.

Even if accidents can take place there are other elements that can cause risk, and that can be internal and external delays as mentioned above. One particular delay that is mentioned frequently in the interviews, as subject for risk element, is delay on ventilators:

If the ventilators don’t arrive, they will stop the production because they are a main element for further work. They are a critical risk element.

Those risk that fails to appear are the peril, and they give hazard to delaying several other divisions that cannot carry on with their production.

Aibel is a very large organisation with many employees and when it comes to costs of risk, it can have a big impact both economically and humanly. The Chartered Insurance Institute (2004) mention: “*The small ones may cost the organisation the most in the long run*”. Aibel’s approach to risk is to take actions for every element, for elimination or reducing risk as much as possible.

An important issue to comment on is Aibel’s reputation (see The Chartered Insurance Institute 2004). This is a non – financial risk that can give the organisation bad outcome if for example employees construct products that are below an acceptable standard. The Chartered Insurance Institute (2004) have also explained that it can harm the organisations name if projects often come behind schedule or if their tender

rarely wins. These elements lead to economic risk or financial risk (see Chartered Insurance Institute 2004) as it is called, by giving project less profit. It is therefore important to have a good risk management process, described by Warning & Glendon (1998), so that Aibel can achieve the best result possible. When the reputation is good, and Aibel do seem to have a respected reputation, it is easier to become one of the most important bidders and the tender issuer or customer will treat the organisation with the respect it deserves. As one of the interviewees said: “*We want to be identified as a serious organisation*”.

To bring Aibel’s risk management to its prime, “Basic Procedure” is made to guide the team from the start to the finish of a project (referrer to Aibel’s Basic Procedure). Already in the estimation period there are risks to consider, and by using a descriptive procedure there are possibilities for discovering and reducing risks already at this early stage. The procedure is used variously; someone uses it in advance of projects while others say that they have read it along time ago. The interviewees describe this stage as the most used risk period.

5.1.1 Does the Risk Management work?

The process of Risk Management (see Waring and Glendon 1998) seems to work relatively well. Employees at Aibel are being constructive and they are thinking more and more about risk and how to make a project as good as possible. As one of the main leaders said: “*We are positive engaged because we see the necessity of it*”. Interviewees describe the process as fairly good, with the risk database as the most important tool in the process. Risk management reminds them that there is risk connected to their daily work, and by weekly meetings the chance to overlook risks is minimised.

A risk database is established in the start of each project and follows through the projects operational life. Patel’s (1994) figure has pointed out these important issues: “*Avoid, reduce and improve as well as control risks*”. The standards mention: “*There must be a plan to implement the policy that is risk finding, risk identification and risk estimation*”. There exists a top ten list that is being evaluated every week, and appears from the “risk exposure report”. By using a restricted list the main risk elements are

being focused on at all time. *“The customers also demand that a top ten list exists”*. When actions has been taken to minimised a risk, other elements take its priority place. This is explained by the UK standards: *“Identification of the exposure to uncertainty and the knowledge is the key to better risk management”*. Waring and Glendon (1998) also emphasized: *“Hazards or threats must be identified and analysed into consequences”*. In this way Aibel continues to monitor and take action relating to the most important risks at all time. Nearly everyone is being included in the risk process by being given actions to perform with deadlines to follow. This process resembles section 2.3.2, where Aibel’s process are similar to both Patel’s figure as well as Jeyne’s statements.

Risk Management has always been a rule of thumb in Aibel: *“It is human nature to look after advantages and disadvantages”*, says one of the interviewees. *“To be able to learn from your mistakes and use healthy common sense”* is also mention by one of the project engineers. But it is not until approximately 8 to 9 years ago, in 1999-2000, that risk management was introduced at Aibel with quantitative analyses among the most important tools. The implementation has been very tough to perform due to a lack of focus from the top management. According to some of the interviewees. *“Focus on risk management from the project leader is alpha and omega on the implementation”* and *“Nothing gets done without the support from the leaders”*. Waring and Glendon (1998) said:

To be as good at possible in risk management, the senior management in the organisation must be interested and active in this process.

The Standards support the statement by saying: *“It is important that top management establishes and includes the rest of the organisations”*. Risk management must also be integrated in small pieces: *“It must not be an over killer, that risk management rules everything”*, remarked one of the engineers.

The management team in charge of the risk management process have had, and still have, a hard time introducing risk management to the organisation. It is a hard process to implement in the organisation, especially when it concerns those workers that have worked with different methods for several years. The leader of risk process said:

The reason for difficulties in implementing is due to small focus from the main management. If the leaders aren't interested, you can't implement risk management in their project”.

The standards mention: “ *The organisations as well as stakeholders must understand each other and their perceptions”*. Aibel hasn't at this point been serious enough in integrating risk management process, and the lead management's engagement or focus might be the reason.

Another view from Aibel is that the risk process might be difficult to implement in the way that is wanted, because of the already tight schedule of all employees. One of the management leaders says:

I think, most people located in a project have so many assignments that they see risk management as a sideline, because they are here to do either engineering, designing or building”.

One of the other head leaders says that the optimal situation is when individuals see new risks or opportunities and report it into the database at all times, so it can be evaluated and action taken. The interviewee also points out that project is very tough or hard to be in due to short time limit and with lack of human resources they become overstrained.

The main component that goes through all of the interview is focus from the top management to implement as good risk management as possible. This supports the theory mention earlier in chapter 2.3.1, where the senior management must take attention to risk assessment seriously.

5.1.2 Is there a formal guideline/ procedure?

There exists a Basic Procedure at Aibel. This is a main guideline in risk management: “*If the process is carried out then so is the procedure”*, says the leader of risk process. Everyone knows about the procedure that has been made, but not all of them use it or know its contents. The standards tell: “*A guide must be made to link up factors against each other”*. Jacqueline Jeynes (2002) has made a list containing some points to see that to be simple and logical in the process is important.” *Everyone that is included in the risk system, shall be familiar with the procedure”* is one of the leaders statements. He also encourages his project members to use the procedure in relation to

risk management. But a procedure is hard to use 100 percent because there may be other elements to focus on. “*I don’t think we use it at all*”, said another interviewee. “*I might have looked over it one time*”. Others describe the procedure as being of assistance to use at the beginning of every project:

The procedure is the expected result you have when using the system. This is a basic procedure that is project adjusted. But it is never big changes, only minor text forms and adjustments to contracts and according to contract forms.

One of the project leaders is unsure about how the project team relate themselves to the procedure, and think that there is potential of improvement in those procedures. The leader of risk process points out that making or using a project procedure is against those formal directives from Aibel’s management:

It costs money to develop these project procedures, so we shall not do that. People have been spoiled, they have had too much freedom in their project... There has been a sort of culture in this organisation.

Aibel’s procedure should be used more actively than it has been in present times. Risk management process will be easier to follow due to improved perceptive and common understanding.

5.1.3. What are they using of the Basic procedure?

As the leader of risk process mentions, there is focus on the risk register, with tasks like identifying and actions of risk elements, supported by Patel’s figure of 1994. The hardest part is the quantitative (see the Standards):

It works best in the tender period- out in the projects it is more inconvenient because of...maybe the daily routine is too busy... I think it just boils away.

He also thinks that the reason for some of them is that they don’t follow the instructions, but does it their own way. Especially those who aren’t interested in risk management and have leading roles can bring the process to a pessimistic level. There are workers that are uncertain of the procedure and how to pursue the process. “*It might be a little bit frightening to quantify, but there is also resistance to do it as well*”.

Another leader points out the difficulties with quantification:

The last time I checked the procedure I didn't recognise the project execution due to the focus on tender processes that includes quantifying, which gives us nothing.

The procedure might also be too difficult to understand for many of them because their main tasks aren't risk management. People that work with risk at daily basis should have more experience or knowledge about risk management, to prevent the procedures contents becoming incomprehensible. The Standards points out:

Risk management standards will help promote national competitiveness, is suitable for the purpose and secure products and processes.

The procedure also contains calculations of probability that the projects don't use at all. They do calculate consequences (as shown in the Standards and Aibel's Basic Procedure), but the method that is used is more simplistic than the procedure says. The Standards also mentions that risk estimation "*is to estimate possibility and potential consequences for use as assistance of evaluating risks*".

The statements changes inside the division, because another one said that the procedure is being used as it should be, with a proper amount of risk towards the project. "*The one thing that is an issue is the time limit*".

Basic procedure is being used at a point, but there are questions as to how well it is being implemented in the real risk management of the project.

5.1.4. Involvement of the process of Risk Management

There are different views due to the interviewee's knowledge and interest in risk management as we have mentioned before. Especially those who use risk database and are risk coordinators at projects are focused and engaged with the process. They see the importance of risk management because they already experienced the differences in projects that use or don't use risk management:

I've been to projects where the project leader or the management itself didn't care about risk management ...the process failed.

One of the project leaders pushes the risk responsibilities to the risk coordinator. That is pursuant to Aibel's Basic Procedure, which he should, but there is also room for improvement so that everyone thinks a little bit about risk everyday. To write risk elements themselves into the risk register will gain experience of the database: "*We don't use the risk base itself, but uses the excel spreadsheet*". The standards points out: "*it is important to eliminate preconception or biases*".

Because of our lack of expertise, we cannot give strong guiding on the topic, but we see that Aibel's lack of knowledge result in the excel spreadsheet. But they do use the risk database at the beginning of each project to identify and estimate probabilities. There are potential improvements, which could be made so that Aibel can be better at proceeding with risk management through the whole project.

As one of the risk coordinators said: "*Not everyone knows how the base works. If they get a link to the database they don't know what to do*". This statement is supported by one of the others that experienced project members ignorance of the risk database. The importance of making the risk database familiar is also remarked upon, so that people might use it more, and that it is easy to use.

We also have an internal web site at each project where people can inform about elements to make improvements and so on. There we can leave information on what to do about registration and things like that.

The leader of risk process argues that lack of knowledge about the risk register might be caused by too little training or education on Lotus Notes database as tool for risk management: "*There has been developed seminar as internal education*". The seminar contained cases with presentations and other useful things such as elements to train the organisation. He also remarks:

There is still much work to do there because not everyone has taken the course, and there have been staff turnover. So this is mainly a continuous process of training the organisation. That they see the importance of doing this and understand why it is done.

The Standards view on effectiveness: "*There should be commitment from leaderships, responsibility and resources for training and development*".

For Aibel to reach its potential level of risk management, it is essential that education and training is given to all participants.

One of the risk coordinators also highlighted the management as the main source of implementing risk management. Some project member's moan when risk management is mentioned, but it is a subject that is required from the management and supported by Warning and Glendon (1998). It is required at Aibel as well as by the customer.

One of the project engineers points out the following:

The management, they are becoming very good. When I speak about management, I mean at the project, and the project leader is central in all of this and they must obviously have focus on risk management.

He also remarks that the main management has given the project leader instructions on focusing on risk, so it is important that they focus as well.

When we talk to the leader of risk process, he attributes to the problems to absence of management focus (see Warning and Glendon 1998 and the Standards). He says:

"Risk has been hard to implement, and I think it is because of too small focus from the main leaders". When radical processes like this is implemented, he points out the importance of main managements sponsorship.

The positive thing the process is that the risk register works. That is the main element according to the leader of risk process. *"You can quantify until the death comes, but it won't help a bit if you can't identify difficulties and give actions to those who needs it"*. Once again, the importance of focus from the head management is essential.

When we ask the reason to why risk is hard to implement, the answers aren't always focused around the lead managers, but the hectic workday itself. The leader of process comments: *"People think that this might be too much, they have to deliver reports here and there, everywhere"*. And this is also one of the reasons that people don't do risk management, because it doesn't required so much feedback to the main management.

As regards to the involvement of risk management, there are different views: *"Some people are very engaged, and requires the process"* while *"There are people that don't do as they are told or as the procedure says, they have too many of their own opinions"* is another statement. It is also said that it doesn't depend on the division but on each persons to how the process is being used. This statement supports the expressed opinion above.

One of the project members admires his project leader and his approach: *“He is a really good initiator to risk management”*.

The main leader in our interviews said that risk management has been used on many different ways over several years, but it isn't more than five to ten years ago that Aibel deliberately called the process risk management. As one of the engineers said: *“Risk has always lay in the background of people's minds”*. The main leader also focuses on the risk process to be the progress to better results. A method to improve that could be that lead management should demand reports or documentation as well as proceed to follow the basic procedure and its guidelines. A suggestion could be to edit the procedure together to get a process approximately as practised.

5.2. The communication within the organisation

We asked the interviewees about their points of view concerning the internal communication, and how its been practised. According to Dr John Hood's lecture notes (2007): *“There is no co-operation without communication”*. The answers were diverse, and the communication was split into several elements. To begin with direct communication within human labour, there are meetings with divisions as well as meetings with customers on weekly basis. These meetings contain top ten lists and highlight the most elementary issues: *“ We look at top ten, give actions to them and summarize to see what we can do and find things that influence”*. In these internal meetings everyone in the leader group participates, so they are informed of every division's risk elements.

Warning and Glendon mention that risk assessment *“is a process which requires attention from the whole organisation”*.

We were also told that in a project there was a competition on who got the best risk element or who had most risk elements on the top ten list: *“They had rewards and lotteries and much focus on risk and so on... They did communicate more than some of us...”*

As regards the communication within Aibel, Haugesund, there are efficient results according to the leader of risk process. Aibel has offices all over the world and there isn't much communication between for example Haugesund and London, says the leader of risk process. The largest department at Aibel, maintenance and modification,

has its head office at Forus, Stavanger, and the communication is described as good between Haugesund and Forus: *“There is usual...communication you might say, a short way to... from the middle management to the top management”*, said the leader of risk process.

The Lotus Notes program works as a communication channel with its mail system and links to risk elements. The competition mentioned above also included use of the risk database that is made in Lotus Notes.

Both risk coordinators and project leaders express lack of activity as one of the main reasons why the communication isn't good enough: *“It is an objection that people generally could improve their use of the system actively, and report frequently”*, says one of the leaders of project management.

The communication is also integrated in weekly meetings and monthly reports, where risk management is on every agenda. One of the risk coordinators emphasised the meaning with risk database and the links that comes with risk elements:

There are people that say they report, they never hear anything afterwards, but...maybe this can be done better, but everyone has access to the base, it is where you have logged the risk element and be able to monitor it...

5.2.1. Lotus Notes as tool of communication

There are different views according to Lotus Notes. They all agree that the mail system is very functional and proper to use. Every morning at 9 o'clock, it goes through the risk database and find dates that are expired and sends out e-mails, called “overdue – links” to remind project members of their tasks. This is a point of view that is supported by the management as well: *“It is a system that works, a system that our customer is satisfied with...”* One of the project engineers point out that Lotus Notes is appropriate to its use:

As long as we use Lotus Notes here on the house and in every data base, it is Lotus Notes, then it has, then it has, huge or a clear advantage to communicate without any adjustments.

An element that gives Lotus a benefit is that people are used to the program, and if Aibel invests in a new program there would be huge demand to its contents. One of the risk coordinators commends Lotus Notes as safe program.

“The program is more or less old-fashioned or outdated”, said the same interviewee.

It is inconvenient and inadequate in its use due to several elements:

Reports: The program doesn't allow the users to put different actions with different time limit to one person or several people. Then they have to use an Excel spreadsheet, which are easier and give a good overview of risk elements and their actions.

There are also complaints about using reports outside of Lotus Notes, to use the information. There should also have been a button to push so that the information would be transferred from one database to another.

Lack of experience: Several leaders mention education as a cause to why the Lotus Notes is referred to as useless on some matters. The program might be better than project members know, but some of the interviewees don't have enough knowledge about Lotus Notes to give the exact cause. The main leader also agrees to this argument: *“The trouble with all systems is that there has to be someone there to tell them what to do”*. And if there is a new system without guidance, people will soon refer back to the safe system that they used before.

A searching concept: One of the project engineers misses a level to bring a hundred percent search model or concept (search program).

The leader of risk process agrees that there are weaknesses in Lotus Notes. But he also remarks that the customers satisfaction with the present system, and that the system works well enough. The largest weakness is the negative reports that were mentioned earlier as by several interviewees. This is now under improvement, and he now think that Lotus Notes is adequate to its functions:

We have looked at other systems as well, but we haven't seen that they can give us so much more. We had an evaluating of Pims, risk management, they exclude some functionality that we already have in Notes, automatically sending and “overdue” mails and so on among other things.

An English system, made by Safran, is also examined. The system was one of the best system ever made, but the investment is too expensive. The question to ask might be how good is the current system, Lotus Notes, compared to other systems on the market.

5.2.2. Are new risks easy to capture?

Our intention with analysing this subject is to find answers as to how communication works in the risk process. The main risk communication is the risk register with its link to each risk element. The risk register measures consequences, severities and frequency, and the top ten risk elements are discussed at meetings both with divisions as well as inside the project. As the leader of risk process remarked: “ *Every project has its own risk coordinator that introduce this at the meeting*”. The impression is that where risk is taken seriously, so is the communication within a project: “ *At meetings they shared information about risk elements to highlight every specific element*”. One of the project leaders points out the importance of reporting new elements even if there is a busy work day, because the action taken on an element may benefit to other tasks in a project: “ *If you don’t report then there won’t be feedback, unless something goes really wrong, and it was your responsibility to report it*”. The Standard UK points out that: “ *identification is the exposure to uncertainty and that knowledge is the key....*”

As mentioned before, it is important to include all participants in the process. There is also given reference to project leaders, that they see the importance of risk management. Then they can influence the comprehension of risk management to project members as well as lead management. In this way the risk process is taken care of and has the amount of attention as it deserves.

Attentions to risk elements are mainly done by people inside the project management and levels above. As one of the project leaders remarked: “ *I claim that those at the work shop don’t attend the risk situation*”. Not every worker participates, but foremen are included at some levels. There are also limited uses of risk management at the organisation as well:

... it is a system that basically includes management, engineering and some administration... but I think most of the activity occur at the management level.

5.3. Improvements of Aibel's Risk Management

We ask the interviewees about proposals to make the risk management and process better. The Chartered Insurance Institute (2004) mention:

There is growth and evolution in failing and learning, so that the future can bring better solutions and guidelines.

They all would like changes or updates to make risk management as good as possible. The main answer to this question was focus from project leaders that they support and contribute to successful risk management. One risk coordinator expressed that there is no good in risk management if the leader doesn't back up the system: *"I can shout as much as I possible can, but there is no use in doing that if I don't have support from the project manager"*.

The commercial leader supports those statements made by other interviewees, and points out reports as a tool for improvement. There also has to be someone that's enthusiastic and impatient because there is always room for progress.

Other elements that is brought up are:

Education: People need more information or training in using Lotus Notes as a risk register. By knowing the system well, people might think that Notes is a useful tool instead of hesitating to register risk elements. Even if people should know that to do, there is still progress to be made.

Contest: By using competition as a tool for implementing risk management it highlights the process. The former project Sleipner had a contest as remedy for bringing up risk elements.

Requirement: One of the main leaders of our interviewees says the following:

"Maybe we should require that everyone report ten elements every week?"

Procedure: There is an improvement potential in the procedure, says some of the interviewees: *"They don't reflect the daily management"*. The suggestion is to simplify the procedure and give focus to the real project management. According to this proposal, the leader of risk process has in the present time, made some changes in the procedure: *"... a procedure that is simplified and mainly works with risk management at frame work contracts"*. It is a flow chart or diagram that can be used on risk register and how to manage that, the quantitative part is absent.

Quantification: Even if the "new procedure" leaves out the quantitative part, some of the interviewees long for a guideline to do this: *"Some more help to be able to*

quantify in the project execution”, says one of the leaders. “*What is worst case versus best case situation?*” said another project management leader. There is desire for a methodology in this section as well as training in doing so. “*To estimate consequences. To put value to them*” is a third expressed opinion.

Distribution formula: Risk management is not a full time work or main tasks for several of the interviewees: “*Risk is like a sideline*”. There are requested a “key” measurement to how much risk management at all time.

Risk elements: One of the leaders suggest several actions for one risk element, with different people responsible and the possibilities to use different time limits.

Kick off meeting: With regard to every new project there should be a meeting where the intention is what and how to resolve and close the projects.

Risk coordinator: “*There should be a risk coordinator designated to... in minimum 50 % employment in smaller project and 100 % in large project*” recommended the leader of risk process for maximum impact.

Consciousness-raising of the process is also an idea recommended by the leader of process. As mentioned above, the top management must be interested in and focusing on risk process to illuminate the importance of risk management.

We have got some suggestion from the employees to improve the process of risk management. There should be a deeper study of these subjects.

5.4 Our research questions

To give a proper evaluation to our main problem: Can Aibel improve their process of Risk Management, we have to look deeper into our three research questions:

5.4.1 Do Aibel have a formal, integrated risk management process?

According to basic procedure and our interviews, Aibel do have a formal risk management process. The process is based on Basic Procedure and the UK standard. Even though there is a process, it is not entirely implemented in the daily work. Some follow the procedure slavishly, while others have looked through it only once.

5.4.2 To what extent are all workers involved in the risk management process?

Basic procedure claim that all project members shall be involve in the process. There are involvements by the Estimation and Risk Management Group. Everyone has knowledge of the database, but the use of it is dissimilar. It is also indicated that Risk Management is too time-consuming in proportion to their main task.

5.4.3 How is the risk communicated between all participants in the project?

All theory shows the importance of head leaders and their involvement with Risk Management process. Due to the interviews we see a significant demand after focus from the head leaders and their request after feedback. Lotus Notes is however a tool for communication, as well as meeting at weekly and monthly basis. There are different views to the Lotus Notes system due to its functionalities. A risk coordinator shall also be used in every project.

5.5 SWOT analysis and conclusion to the analysis

With help of a SWOT-analysis, as the UK Standard suggests as a risk analysis method; we will prepare a conclusion from our findings above.

Our analysis gave answers as to where Aibel, as an organisation, has their strengths and weaknesses, according to the theory and standards. To get an overview we used SWOT analysis to divide our findings into four central main points: strengths, weaknesses, opportunities and threats. The findings are listed in a prioritised ranking that show our suggestion to improvements as well as advantages.

Aibel is on the right track according to the risk management standards and the theory. According to Patel's figure in the theory, we see that Aibel is using the same structure in their risk assessment procedure. If we read the UK standard they use a similar process as well.

But as written in the SWOT, we think that implementing risk management in Aibel needs a greater contribution from the lead management. Waring & Glendon (1998) as well as the Standards support this statement and indicate its importance. Many project leaders have been praised for their approach to risk management as an important subject in a project.

To accomplish a process, employees must be given requirements and directions to follow. Some advice could be to use Standard Japanese that has direct rules of procedure as well as structure to follow, as mention earlier in our theory section.

There are also expressed to little time on daily basis to risks, and there should be a distribution formula to how much consideration should be given towards risk management. An idea could be to make a job description containing this formula to risk responsibility.

Due to our small expertise on databases as well as external organisations procedure, we cannot give specific suggestions or guidelines. But our evaluation after doing these interviews is that there are needs to update the system in co-operation with project members.

To coordinate these elements above, we suggest education of Risk Management and the importance of it. There are also been requests for modification and training in the Basic Procedure, especially on the quantitative part. Lotus Notes needs to be used more than it is at present time, and the reason might be that its functionalities are unknown.

SWOT:

Strengths	Weaknesses
<ul style="list-style-type: none"> - The reputation is respected - Customers are satisfied - More and more project members see the advantage and utilities with risk management. - A organisation with qualified resources - It is a well-informed and reflected division - Risk management is very functional, particular in the tender period - Their own Basic Procedure - Risk database, risk register are implemented as well as reports - Framework agreement reduces risk - The communication is good between “neighbour-town-offices” - Lotus Notes as communication channel - Overdue mail - Aibel see the opportunity by using for example competitions in their seek to better risk management 	<ul style="list-style-type: none"> - Implementing risk management is difficult - The Basic Procedure is incomprehensible at some points - Some texts are difficult to understand in the procedure (“working language”) - Quantifying is a difficult process - Lotus Notes has an old fashioned report system (under review at the moment) - A busy work day reduces the priority to risk management - There are various engagement to RMP - Lack of knowledge or training might cause the ignorance of risk process - There are several own opinions to how the process should be carry trough - Risk management might be to demanding as a side job
Opportunities	Threats
<ul style="list-style-type: none"> - More focus from the top management to implement the process even better - Extend knowledge and education - Improve Aibels risk management engagement - Upgrade Lotus Notes on reports (under review), find solutions on work methods - Evaluating of Lotus Notes as a new research - Development of new search methods - Potential to reform the procedure to be fully useful to its matter - A system for quantifying (easier method) - A good risk management process leads to better results - Extend the division of labour according to risk process in a project 	<ul style="list-style-type: none"> - Small focus from the management doesn’t implement the process - Lack of focus on risk management cause unwanted incidents - Implementing risk management process due to small focus - To little knowledge about Lotus Notes can result in a project that departs from Aibels regulations. - If the database isn’t adequate, it can cause negative or reduced reputation due to competitive advantages to other organisations - Small interest to risk management process because of to small acknowledge, interest or lack of experience - Difficult process can result in reduced the workers willingness to risk management - Lack of interest and training might reduce the point in having risk management process

6. Conclusion

Our thesis looked at the following problem: Can Aibel improve their process of Risk Management? The answer is yes. We see that Aibel is on the right track in relation to implementing the Risk Management process. The majority of the interviewees also agree that they have a good existing process, but there is potential for improvements in some areas.

According to our first research question: Do Aibel have a formal integrated risk management process? We think that they do. The process isn't entirely integrated, but important elements such as a risk register are present and ensure that action is taken to deal with risks. Aibel's "Basic Procedure" is familiar to everyone, but there are shared opinions on its use. The procedure is mainly used before project execution, but it doesn't correspond to the project practice to the extent it should be done. We are acquainted with the current revision of procedure at the present time. We quote from Jacqueline Jeynes(2002): "*A guide must be made to link up factors against each other*".

Our second question: To what extent are all workers involved in the Risk Management process; the study shows that the lead management doesn't support the implementation, as wanted by the interviewees. This discovery doesn't support our theoretical analysis, which emphasises that lead management's initiative and effort are vital to further progress towards Risk Management in the organisation.

The interview analysis shows that Lotus Notes, as an assisting tool, works satisfactorily in areas like mail and risk register, but it has its weaknesses in key areas such as risk quantification and reports.

The majority of interviewees are users of external supporting remedies in addition to Lotus Notes, which has resulted in a reluctant acceptance by the management.

The third question: How is the risk communicated between all participants in the project, is the most critical discovery in our research. The reason might be lack of education or training with the Lotus Notes system as a tool for risk register among other things. Another cause can be lack of engagement due to individual interest to

learn Risk Management and to be willing to implement the process. At the same time it can relate back to lack of focus from the top management.

There are some limitations in our thesis, and one limitation is the limited time frame. The analysis would have been better if the study had been done on several time frames, instead of a single case study. External interviews would also have given the thesis a better overview according to how good Aibel's performance is to Risk Management. Interviewing more of Aibel's employees would give a more accurate picture of the risk management process.

We also think that our knowledge about Risk Management, incl. Lotus Notes, is rather limited. The thesis might have been better if we had known a little more about other programs.

After all, we might recommend more education or training in using Lotus Notes, so that the division can improve their use of risk register. There are chances that Aibel can improve their Risk Management. We also suggest that the head leaders at Aibel enhance their focus to the process, to emphasize the importance of having a good Risk Management process. It is also important to suggest that employees, who are dealing with risk, use the same system.

Even though there are elements that require more study or knowledge, the Risk Management process has attained its position among essential responsibilities at Aibel.

If there should be future research in this area, it should be a study to what extent Risk Management has been improved, and which process are done by the lead management to make the implementation as good as possible. One other study could be to compare Aibel's processes against external organisation's that deal with similar problems.

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