



## Acknowledgements

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Rakel Elisabeth Filtvedt

## Sammendrag

Denne masteroppgaven utdyper viktigheten av at kunnskapsleder er klar over drivkreftene hos sine ansatte, i dette tilfelle; kunnskapsarbeidere. Tidligere forskning har belyst at kunnskapsledelse, så vel som motivasjon av kunnskapsarbeidere er et udekket felt med sår behov for videre utdyping. Da kunnskapsarbeidere er en voksende arbeidskraft i dagens samfunn, vil fokuset på disse bare bli mer betydningsfullt for å kunne lede suksessfulle bedrifter.

Oppgaven er basert på «To-faktor»-teorien til Fredrich Herzberg som fokuserer på to typer faktorer: motivasjons – og hygienefaktorer. Herzberg argumenterer for at motivasjonsfaktorer bidrar til økt motivasjon, mens hygienefaktorer bidrar til mistriivsel om de ikke er tilstede. Gjelder dette i dagens samfunn, 50 år etter den grunnleggende teorien, vil bli utforsket i denne oppgaven.

Det er blitt utført intervjuer av to kunnskapsledere, samt sendt ut et spørreskjema til deres ansatte for å besvare problemstillingen. Ytterligere resultater kom frem i prosessen og alle var relatert til hovedoppgavens essens.

Resultatene konkluderte med, at den tidligere teorien utformet av Herzberg oppfattes som en begrensning i dagens definisjoner, i tillegg til at utdannelsesnivå også har innvirkning på motivasjon hva gjelder arbeidsoppgavene og stillingsnivå i bedriftene. Videre ser man at personligheter har en stor innvirkning på motivasjon og trivsel, og man kan konkludere med at det å skape en mal for å lede og motivere kunnskapsarbeidere ikke er formålstjenlig.

## Abstract

This master thesis highlights the importance of a knowledge manager being fully aware of the drive and desires of their employees, and in this case, Knowledge Workers. Previous research has shed light upon the fact that knowledge management, as well as motivation of knowledge workers is a field in need of more extensive research. As knowledge workers are a growing workforce in today's society, the focus on this group will be increasingly important in managing successful businesses. The thesis is based on the "Two-factor" theory formed by Fredrick Herzberg, arguing that there are two separate factors contributing to this; motivation and hygiene factors. He argues that motivation contributes to motivation, and that hygiene contributes to dissatisfaction upon absence. Whether this is the case fifty years later will be explored during the thesis.

Performing interviews of two knowledge managers as well as sending out a questionnaire to their employees was the method used to encounter the answer to the research question, and to uncover other relevant results formed during the process.

The results of this study concluded with the fact that not only was the previous theory formed by Herzberg perceived as a limitation in today's business environment, it also suggests that education level has some form of impact on motivation regarding the work tasks in the businesses. Whether hygiene factors have the same effect on motivation and job satisfaction as motivation factors was also an interesting question which started to uncover itself during the research. Furthermore, personalities contribute a great deal to motivation and job satisfaction, and one can conclude with the fact that creating a formula for managing and motivating knowledge workers may not serve its purpose.

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# 1. Introduction

## 1.1 Background and Research Question

Living in the 21<sup>st</sup> century and coping with society being in constant movement, makes managers of today's businesses wonder how to retain their most valuable employees. Terms like motivation and job satisfaction are being looked closer upon, and many of today's best managers are genuinely interested in what their employees are thinking.

As Knowledge workers is a growing group in today's business environment, and the traditional "management" is slowly phasing towards "leadership," there will be more competition and higher expectations towards tomorrow's leaders. Not only are they committed to reaching company goals and strategies, but they are now in charge of employees with higher education, more expertise, and higher demands. Hence the importance of leaders asking themselves "How do I manage knowledge workers?"

Trying to evaluate how to manage knowledge workers from a leadership point of view, makes it imperative to map what motivates knowledge workers. In addition, determining whether one's dreams and goals correlate with the company and their strategies in order to cooperate towards motivating as well as developing capabilities. In order to receive a deeper knowledge of this, one must also determine what defines someone's job satisfaction, as the two are assumed to be closely linked.

When selecting a research question, all factors would have to be present; knowledge workers, motivation and job satisfaction. To simplify this, the option of grounding it in a theory, led me to base it on previous research by Fredrich Herzberg's "Two Factor Theory," where motivation and job satisfaction, or theoretically – hygiene factors, were clearly defined. The result generated the following research question:

***Which motivation and hygiene factors shape knowledge workers' job satisfaction?***

Knowledge-workers is a broadly defined term today, and one definition includes all employees with a higher education (Bachelor's degree or higher). When using this terminology we automatically include pre-school and day-care teachers as well as health care workers at all levels (i.e. nurses). Another definition is whether a worker knows his trait better than anyone else does, which for instance includes waiters, mechanics, and transportation workers. Common to these



mentioned professions is their main goal of perfecting or adjusting something which is already present, their freedom in defining their own work-day is limited, and they are not necessarily “creating” something new and different. Examples of the latter case include research, consulting, and development to name a few. These professions fit the description given by Thomas Davenport’s last definition; “those who *think* for a living;” and will be the official description of knowledge workers in this thesis. This definition opens up the term in order not to limit the concept based on education, as it is not a given that one must have a higher degree for thinking, however the clear bias of higher education in knowledge businesses, makes for this assumption to be rather implicit.

The jobs that employees have today require a great deal of qualifications; formal education and the ability to acquire and to apply theoretical and analytical knowledge. They require a different approach to work and a different mind-set. Above all, they require a habit of *continual learning*, a trait being imperative for a knowledge manager to keep developing in order to maximize results.

(Drucker 2001, p. 305)

## 1.2 Selection of Research Objects

The companies chosen to look closer upon operate in two separate industries. Company A is a non-profit, privately held, research institute, who also receive state-funding. Company B is a privately owned media agency belonging to a large international corporation. The reason for choosing these companies was private interest in both firms, as well as being representative entities according to the theory and definitions of knowledge-businesses. When approached, the two managers were immediately intrigued by the research question and were interested in being evaluated for a master-thesis. The cooperation was crucial and positive during the process as its conclusions might help them further understand knowledge-workers and their drive.

In company A, the interview-object is a research-director in a research institute. Reporting to him are 60-80<sup>1</sup> research- scientists, engineers, and PhD-candidates, which were the respondents in one of the surveys. Their business model is based on researching and developing technology mainly for usage in the industry.

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<sup>1</sup> The reason for the large variation in employees, is the number of PhD researchers who have shorter engagements and are hired in on a project-base.

In company B, the interview-object is a CEO for the entire Norwegian office, located in Oslo. His approximately 75 employees were the respondents of the other survey. This company is a consultancy, connecting advertisers with consumers using the appropriate media and designing campaigns to serve the needs and expectations of the advertisers.

Though being performed in an objective manner, basing the research on methods widely acknowledged for performing this type of research, results could have varied under different circumstances. Questions in the survey could have been misinterpreted by a respondent, or worded differently as well as being based on a social science, there will be possibilities of errors in the data. One can also assume that one individual's response is likely to change over the course of time based on internal and external effects, as well as personal responsibilities, which suggests that the responses received here are mainly indicators of reality and not definite.

### **1.3 Outline of Thesis**

Following this introduction, there will be a presentation of the theory used in the research as well as discussions around the applications of these theories in present time. There will be definitions of knowledge management (known as KM throughout the thesis), knowledge workers, and motivational theories with a natural focus towards Fredrich Herzberg's "Two factor theory" which is the fundamental theory for this research.

Other theories will be mentioned as well as linkage between KM and motivation/satisfaction.

Further, the research method will be introduced and explanations around the choice of research method will be given. Hereunder, both the qualitative and quantitative methods will be presented, as this thesis has used both interviews and surveys. In addition, the reliability and validity of the thesis will be ascertained.

After this, the results will be explained, presented, and analyzed, and in chapter five these results will be interpreted and discussed. The conclusion will then sum up the paper and its research.

When the main part of this master thesis has been submitted, there will be suggestions towards further research and implications/limitations to the research. At the end of this master thesis, there is hope that the understanding of a knowledge-worker's motivation becomes clearer and that they may serve a purpose in knowledge management in the future.



## 2. Theory

### 2.1 The Emerging of the Knowledge-based Economy

Already in the late 1950s, a management consultant named Peter Drucker stressed the importance of paying more attention to knowledge workers and knowledge management. However, the evolution of this theory has shown slow progression and one may claim that the understanding of these concepts are no better in the 21<sup>st</sup> century than it was 50 years ago. Although there has been a clear evolution from the production society upon which our countries have been built, to the service-based society of today, the awareness around Knowledge Management (KM)<sup>2</sup> is limited. Managers do not have a clear understanding of how to manage knowledge workers or what their most important daily roles are. As a matter of fact, managing knowledge itself is a challenge for managers today. For example, in managing and defining the company's knowledge as stock or flow<sup>3</sup> (Fahey and Prusak 1998). Many employers have a great deal of tacit knowledge in their portfolios, and they hire competent and hyper-motivated knowledge workers. As a knowledge worker's main asset is his "thinking mind," there are great possibilities of distinctive capabilities being a lost asset when leaving the company. In order to keep some of the acquired knowledge, there are those who use a codification strategy of storing knowledge, or personalization strategy, hereunder consulting firms. There is a great focus on the dialogue between the employees and their customers, brain-storming processes, and conversations. Everything which has been done previously is stored in the customer database, but the one-on-one conversation, and dialogue, will eventually disappear when a knowledge worker leaves (Hansen, Nohira et al. 1999).

Inevitably, the knowledge society has a more competitive nature than the production-based society did. The requirements to higher education, personal skills, and high performance have escalated in a manner which increases expectations all the way down to children's age. Knowledge workers have a field of expertise in whichever form it is acquired and it is argued that the level of effectiveness increases with its specialization. However, specialization does not generate performance in itself; whereas the knowledge worker is dependent on an organization in order to successfully generate output no matter how individualized the knowledge worker is. (Drucker 2001)

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<sup>2</sup> From here on after, KM will be the official acronym for Knowledge Management

<sup>3</sup> Stock: can the business keep the knowledge regardless of the worker, or Flow: does the knowledge disappear when the worker terminates his employment?

## 2.2 Knowledge Management

“Knowledge is our most important asset,” (Quintas, Lefrere et al. 1997) is a statement on which many CEO’s agree. Knowledge-based assets will primarily be the element of success for organizations in the 21<sup>st</sup> century. Literature is also emphasizing the overall goal to maximize the company’s knowledge-related effectiveness and to constantly renew the knowledge assets of the organization (Wiig 1997).

Lines and Sandvik (2013) state that KM essentially concerns leaders who through decision making, process design, and relational behavior may create or destroy value through the motivation of knowledge workers. The differences in motivation can be a factor in explaining the variation in performance level instead of level of skills. Further, they define KM with two diametrically different leadership methods: “an active attempt to contribute to value creation and task oriented leadership,” and “treating employees as independent, competent, motivated, and responsible individuals whom under no influential attempts perform outstanding” (Lines and Sandvik 2013, p.314). Another way to define these two leadership methods are transformational leadership; which takes on a more active leader role of knowledge workers; and HRPLTA leadership (Hire the Right People and Leave Them Alone).

Transformational leadership is a term not only used concerning knowledge workers, even though research has found that it has a positive relation to it (Nguyen and Mohamed 2009). KM is used in order to leverage core competencies and make the companies more competitive. In order to ensure these processes, leaders have a great responsibility of leading versus managing. One argued method for doing this and successfully leading knowledge workers is being a transformational leader. A leader the employees *want* to follow. According to Bernard M. Bass (2000), transformational leadership lies in the leader’s ability to inspire trust, loyalty and admiration in followers. It is also defined that transformational leadership focuses on the similar values as KM; internal values as vision, values, involvement, and teamwork to mention a few. A transformational leader has employees who want to achieve and are interested in the work itself and the company culture. It is defined as a “soft”, “Scandinavian”, and positive management style where the leader sees and values his employees and their capabilities. Bass also underlines the fact that a transformational leader is most successful when gaining trust, respect, and admiration with his employees; they lead instead of demand.

Other researchers have found that in transformational leadership, the leader spends time getting to know his employees and values their education, background, what motivates the individual

employee and their daily situation in order to adjust their circumstances. Closely related to KM, transformational leadership spends more time recruiting and training (Lines and Sandvik 2013).

However, having core motivation of employees so closely related to the leader himself, can be a challenge. Some knowledge workers appreciate being left alone in an increasingly manner, and are more interested in a manager being a facilitator more so than a motivational speaker. For these knowledge workers, Thomas Davenport's "HRPLTA" management may serve a greater purpose. This management style asserts itself mainly to knowledge workers who are more interested in their own research and may not have a need for teamwork and a positive organizational structure.

A knowledge leader assessing HRPLTA mainly operates as a facilitator and applies to autonomous employees. These employees are those who generate projects and results by themselves and are "hyper-motivated." Though knowledge workers enjoy being left alone, and aspire well under autonomous work-conditions, there can be arguments that this approach does not include any formal improvements on productivity and effectiveness. Knowledge workers will need to be followed-up in one way or another, and the company's main goal is to achieve competitiveness in the industry. Hence, the HRPLTA approach of leaving them entirely alone may be phasing out in its original term.

(Davenport 2005)

### **2.3 The Knowledge Worker**

*"Knowledge workers have high level of skills/ education, with technological literacy, high cognitive power and abstract reasoning. This includes the ability to observe, synthesize and interpret data, and to communicate new perspectives and insights to lead to more effective decisions, processes and solutions for the organizations."*

(Horowitz, Heng et al. 2003)

Thomas Davenport introduced the term "knowledge worker" by describing it as "someone who knows more about his or her job than anyone else in the organization". It is a large and growing category of workers, and they are the most expensive type of workers that companies employ. As the western society evolves from being industrialized due to agriculture and manufacturing work is being relocated to countries with lower labor costs, the importance of having well-developed knowledge-worker skills are critical to the countries' survival. However, these definitions of knowledge workers are not descriptive enough as they could include members of the work force who indeed know more about their job, but have work tasks which are possible to automatize.

They do not necessarily *think* for a living. Therefore, Davenport (2005, p.217) reformulated his definition to *“knowledge workers have high degrees of expertise, education, or experience, and the primary purpose of their jobs... in short; they think for a living.”*

So how is a leader supposed to motivate knowledge workers making sure that they achieve job satisfaction? The rise of knowledge workers has created a demand for a new management style and being a manager today is clearly different from before.

A knowledge worker can be working outside office hours and might even be more productive during non-traditional work hours. In such a case, the manager faces the challenge of adjusting levels of expectations on productiveness so that it might fit best with his employees. This can indeed be a challenge as many companies operate towards a customer and client base which is operative during normal office hours. Adjustments must be made in order for the knowledge worker to apply himself to the greatest extent, but still deliver results as the expectations see fit. “Productivity” as a concept may be replaced with “performance” and “results” when referring to knowledge workers and their main strengths. Since literature as well as managers today find it challenging to find an overall formula in managing employees who mainly are self-driven and recognize their own value for the firm, Davenport (2005) shed light upon the facilitation needs. More often than not, managing knowledge workers include a great deal of administration. Instead of the classical “hiring and firing” concept, firms today focus on recruitment, developing, training and retaining their employees.

(Davenport 2005, Carleton 2011)

“I had to give power, to gain power,” is a statement where Jack Telnak, CEO of Ford Motor Company, illustrates how delegating is an essential part of managing knowledge workers. Where the manager used to be formal and controlling, KM essentially contains reconditioning and accountability. Knowledge workers, who perform better, have managers who “lead” and make the employees want to follow. A mutual respect, cooperation, and teamwork as well as having a leader who takes responsibility, have a lot of knowledge, is result-oriented, and good at constructive feedback. The expectations towards today’s leaders are just as high, if not higher, as they are for the knowledge worker himself. Since knowledge workers are in lesser need of a manager, there has evolved a different management style; be it inspirational, personal authority, and delegation. However, no matter how much a knowledge manager is aware of his employees and these trends, he may not be able to remove internal competition, prestige, recognition, and immensity around the job. Today’s best leaders must possess relational and emotional capabilities as well as a great deal of knowledge (Hillestad 2002).

*“One does not “manage” people.  
The task is to lead people  
And the goal is to make productive workers the specific strengths and knowledge of each individual.” (Drucker  
2001, p.81, Drucker 2008)*

Peter Drucker (2001) defined motivation of knowledge workers as the same thing that motivates volunteers. They need to be challenged, they need to work towards a mission and believe in it, they need continuous training and to see results. Hence, this leads to the assumption that every group in the work force have to be managed differently at different times; employees need to be managed as ‘partners’ and be treated as equals – they must be persuaded and not ordered. In other words, management of people is a “marketing job,” where the essential question being asked by the manager is not, “what do *we* want,” but rather what the other party wants, what are his goals, and how are results considered (Drucker 2001, Drucker 2008)?

## **2.4 Motivation Theories**

According to a motivation study performed in 1946 by Labor Relations Institute in New York, employees had a great need to be appreciated for work done (Wiley 1997). The workers came from a completely different environment then; America was on its way out of depression, and World War II was coming to an end.

In the midst of this, Abraham Maslow published a paper in 1943 presenting his “hierarchy of needs” theory. He presented The Basic Needs, which include ‘*physiological needs,*’ ‘*safety needs,*’ and ‘*love needs,*’ and The Growth Needs, including ‘*esteem needs,*’ and ‘*the need for self-actualization.*’ Being a very relevant study of its time, the “hierarchy of needs” helped explain how a person’s needs contribute to motivation and satisfaction. One starts at the bottom and strives to achieve satisfaction on each level, one at a time. For a workplace situation, one can compare this to employees having their basic needs met; an office space, salary, colleagues and job security before their supervisors can start addressing a worker’s self-esteem and actualization. It also debated that lower-level employees only had the possibility of having the three lower levels satisfied due to their limited work-expectations, as well as higher-level employees were able to have all the needs of the hierarchy met (Maslow 1943, Kaufmann and Kaufmann 2003).

This supports the assumptions of knowledge-workers having more focus on The Growth Needs and value self-realization and recognition. In addition, the 1940s mainly consisted of industry and production workers; but the times have changed, and there are larger parts of the work force



becoming knowledge-workers, which supports the importance of the higher levels of the needs hierarchy.

A study performed in 2004 had two interesting assumptions<sup>4</sup>; employees with high education are less satisfied, and educational level has no impact on intrinsic work motivation (Eskildsen, Kristensen et al. 2004). They found that knowledge workers were more motivated, but less satisfied. However, they also found that educational level had no effect, and assumed the reason for this paradox might be that knowledge workers with high education have more diversified and challenging tasks which may motivate them even though they do not achieve job satisfaction.

Further, Clayton Alderberg developed Maslow's hierarchy and came up with the ERG-theory<sup>5</sup>. Here, the five needs are compressed into three levels; Existence (level 1&2 of Maslow's hierarchy), Relatedness (level 3), and Growth (level 4&5). It helped the flexibility of the theory and created a more general understanding of the needs-concept.

To draw the similarities even further, Herzberg's Two-Factor theory has been said to break down the needs in larger bulk; motivational factors and hygiene factors, where the latter represents the lower three levels of Maslow's hierarchy, and motivational factors represent the two Growth levels of the hierarchy.

(Kaufmann and Kaufmann 2003)

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<sup>4</sup> Relevant for this thesis, the study had a total of eight assumptions

<sup>5</sup> ERG = Existence, Relatedness, and Growth

#### 2.4.1 Herzberg's Two Factor Theory

*"People are motivated by a great variety of needs, which in turn vary in order of importance and over time, or in different situations".* (Lundberg, Gudmundsom et al. 2009)

The "Two-Factor Theory" suggests that humans have two different sets of needs and that the different elements of the work situation satisfies or dissatisfies these needs (Wright 1989).

Hygiene factors are the basic elements of survival. These are represented by the bottom three parts of Maslow's Hierarchy of needs (social, safety, and physiological). These factors are not directly linked to the actual job, but the environment surrounding the knowledge worker. These factors include salary, reward systems, status, and job safety to mention some. They do not promote job satisfaction, though they are relevant elements to a worker's dissatisfaction if they are not met (Herzberg, Mausner et al. 1959).

Motivation factors, or the factors intrinsic within the work itself, may be compared to the top parts of Maslow's need-hierarchy (Self-actualization and esteem). According to Herzberg (1968) these factors include task-recognition, achievement, accomplishment, responsibility, advancement, and the work itself. These needs are also congruent with the definition of knowledge-workers, who thrive upon evolving as a professional. These factors enhance satisfaction if present, but not dissatisfaction upon absence – merely, absence of satisfaction (Herzberg, Mausner et al. 1959).

Furnham, Eracleous et al (2009) cites two researchers (Westwood 1992, Warr 2002), when defining motivation as "...an internal state... giving rise to a desire or pressure to act," and defining Job Satisfaction is defined as "the extent to which people are satisfied with their work." The two definitions separate the concepts although they are often interchanged when discussed. Motivation and satisfaction are, if not two sides of the same coin, definitely perceived as closely related. Herzberg (1959), postulated that satisfaction and dissatisfaction were separate entities caused by different elements of the job. Furthermore, variables such as personality and demographic variables were significantly related to both job satisfaction and motivation. The same researchers (Furnham, Eracleous et al.), emphasize the fact that previous literature regarding job satisfaction and motivation is mainly concerned with organizational or situational predictors, also named hygiene factors. They neglect individual differences. Individuals differ significantly in the way they perceive their jobs, even if work tasks and job description remain

similar. Thus claiming that individual differences must have an effect on work attitude (O'Reilly 1980, Furnham, Eracleous et al. 2009).

Having this in mind, there must be a deeper dive into defining motivation and hygiene factors as of today. Herzberg's theory originated in the 1950's, and though he was ahead of his own time, his theory was mainly directed towards a production-based society. To elaborate, the employees he used in his studies were not defined as knowledge-workers as we experience them today. This might limit the effect of the factors on today's employees. When Herzberg developed the theory, the tasks of workers were more monotonous and streamlined, and factors defined as hygiene, may not have played an essential role. Salary, work environment, status, and relationship with co-workers would indeed be dissatisfying if not present, but achievement, developing own skills, self-actualization, recognition and responsibility motivated employees in a greater sense.

Dividing factors affecting motivation and job satisfaction made more sense back then, but today, it might be perceived as a limitation. The factors in themselves can be defined and understood differently based on the person who interprets them. When distributing a questionnaire regarding motivation and hygiene factors, one major element to take into account is the receiver and his/her frames of references. Definitions may be subjective, and even though there is a common way of perception; people base their own relations to terms and situations which are presented.

Today's knowledge workers have spent many years on developing their own skills and knowledge by attending higher educational entities and strategically choosing workplaces where they can be challenged, as well as contribute with their tacit knowledge. They are well aware of their worth, and the picture we might have today of an employee knocking on an entity's door, hat in hand, asking for a job, is assumed to be an image belonging to the 1950's. This leads us to assume that today's knowledge workers *expect* to develop knowledge, receiving recognition, having responsibilities and achieving goals both personal and in line with the company in which they are employed. Some knowledge workers with even higher educations, such as PhD's might not even consider it a determining factor, developing own knowledge through the workplace, as this is a personality trait which may be in evolvment during personal time as well. It is therefore important to keep in mind that whether said factors yield satisfaction or dissatisfactions, as well as motivation and de-motivation, depends very much on the individual, and believing otherwise may lead research astray (Miner 2005).

Carolyn Wiley (1997), refers to a comparative study on Herzberg's two-factor theory where the following statement is mentioned; "... most empirical studies refute predictions based on this theory. Needs for salary, recognition, and responsibility, for example, have been shown to

operate both as motivation and as hygiene factors” (Maidani 1991). She further stated that motivation affects behavior, rather than performance, and that it is not a fixed trait. Her studies compare the effect of motivation factors and their changes over a period of forty years, clearly indicating an evolvement in this area. The responses changed, but it indicated that motivational value placed on the factors used in the survey, varied according to status, gender, income, and occupation (Wiley 1997).

Supporting this, we may see an increase in the importance of hygiene factors and the evolving of those becoming more motivational than previously assumed. Pamela M. Brenner indicates the importance of the workplace when discussing retention of knowledge workers and that although employees “do not quit based on bad carpeting”, a better office environment may contribute to attracting valuable employees (Brenner 1999).

*“To retain knowledge workers, the workspace must not only support the tasks they currently accomplish, but also the tasks they aspire to accomplish”* (Brenner 1999, p. 37).

As defined by Herzberg, the factors mentioned above are purely hygiene, and are by definition not determinable in the employee’s motivation for further employment. However, one can see hints of change in the evolvement of definitions of motivation and hygiene factors as the needs and wants of the knowledge workers also have changed since the theory first emerged.

Story et. al (2009) performed a study focusing on internal and external personalities and their effect on motivation and job satisfaction, stating that intrinsic and extrinsic values both are relevant, and that the main difference is the personalities which allow themselves to be driven by one or the other. They clearly indicate a contrast between the two types of factors; motivation and hygiene, but state the following, “it seems possible that across a wide range of situations one could be motivated by both intrinsic and extrinsic factors”.

Job satisfaction in itself may not even contribute to motivation, but primarily be a continuous process, while motivation may have a “guest-appearance” playing a more important role when the need for an extra push in an ordinary everyday environment emerges. Even hypermotivated knowledge workers experience mostly the everyday – life, and may need so-called hygiene factors as salary, work environment, and colleagues in contributing to the motivation of getting up in the morning, heading for work and performing the work tasks. Motivation-factors, defined by Herzberg, will in this assumption play a larger role when the knowledge worker determines his next career move, or is considering the option of staying put or changing jobs.

Examining these motivation factors closer, there is, a great link to the top two levels of Maslow's Hierarchy of Needs (Maslow 1943, Kaufmann and Kaufmann 2003). They are defined as the intrinsic factors, and focus mainly on the values which come from within. These factors are achievement, developing own skills, self-actualization, as well as recognition and responsibility (Herzberg, Mausner et al. 1959). However, a couple of these factors may also appear in defining a knowledge worker and his main characteristics. When Herzberg first defined motivation factors some 60-years ago, production workers clearly outnumbered knowledge workers, mainly by definition. There was of course workers who were interested in the concept of "thinking for a living" and many workers wanted to achieve more than working in the industry having responsibility for machinery in a plant. This, one can assume, was the main source in Herzberg's study describing how they were motivated and the intrinsic factors came to the surface.

Today however, these factors may now be a given for knowledge workers. They expect jobs to help them develop their own skills, have a great deal of responsibility, and achieving personal and professional goals.

In the matter of self-actualization, we can question the definition of this factor. Is it subjective or is it objective? Who defines a knowledge worker's success? One can argue that self-actualization is a subjective matter, and one may question what defines personal achievements and success. Is it the way one is perceived to the people around? Do peers look at the material objects and agree that one is successful based on status, salary, nice car, big house, and working for a known company? On the other hand, is it defined as being content; having a home, a family, a steady and interesting job, social network, and doing well in daily work tasks? This is an impossible question of getting a straightforward answer to. Mostly because knowledge workers, per definition, expand from research-scientists, to the stockbrokers on Wall Street. Who is to say what defines each of their self-actualization and in turn their core motivation? In addition, if knowledge managers do discover this, how will it be relevant in the motivation of these specific workers?

## 2.5 Incentives

There are plenty of<sup>6</sup> articles discussing how to improve knowledge worker's performance, and what motivates employees. Though the founding theory used earlier in this chapter discusses the dependence on individual cases, there is also a possibility for assuming the existence of both intrinsic and extrinsic incentives and motivation/satisfaction factors.

Taking feedback as the first example; good salary and job security will always include an element of feedback for work accomplished. In whichever sense of the word, employees are assumed to feel safer when they know "how they are doing". General feedback, both positive and negative, help most employees feel a sense of safety and competency. Employees may consider salary to be a solid feedback concerning both their job and their abilities. Though many incentives are based on the job itself, self-actualization, and the feeling of succeeding in a job well done, tangible or verbal incentives may very well bestow a high level of satisfaction upon the knowledge worker. As feedback, salary, and job security may be closely related, there have been different types of performance-based reward systems closely examined in diverse literature; hereunder dividing them up on an individual level and a collective level (Wiley 1997).

Performance-based bonuses can include incentives for increased units produced or sold, as well as increased profit, and size of accounts, to name a few. Especially in sales, there are clear examples of performance-based incentives, but this will be looked closer upon below.

In broad terms, one can divide performance-based incentives into two main purposes; behavioral- or attitude influence, and selection (attract, retain, or end employment) (Kuvaas 2008).

Under behavioral – or attitude influence, there is a great focus on appealing to the worker's actions, be it changing them or adjusting them. In such cases, clear and predictable links between work-results and rewards are imperative in order for the worker's feeling of instrumentality<sup>7</sup>. Individual result-oriented bonus may be discussed as the most effective as the possibilities of measuring the job efficiency and seeing the links between one employee's performance and reward-systems. Much unlike the collective result-oriented bonus strategy, where the whole group is being rewarded and the "free-rider" problem may arise (ibid).

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<sup>6</sup> But not nearly enough...

<sup>7</sup> Mode of thought and action that identifies problems and works directly towards their solution ([https://en.wikipedia.org/wiki/Instrumental\\_rationality](https://en.wikipedia.org/wiki/Instrumental_rationality))

Another way of adjusting to collective versus individual result-oriented bonuses can be to use both on different hierarchical levels. For instance, rewarding the department for reaching a collective goal, and further inspiring each worker in the department of individually contributing towards personal goals with an individual bonus which altogether adds up to reaching the departments collective goal. This may inspire to cooperation within the department and working together, but still achieving a little extra for the good of oneself. One can combine motivation factors such as achieving goals, teamwork, developing own skills, with self-actualization, salary, status, and recognition. Appealing to both the individual worker, but also contributing to the feeling of being a part of something bigger, may have an effect on knowledge-workers when using incentives as a motivation and satisfaction factor. However, previous research argues against this mix, but instead urges employers to choose between the one or the other, though this cannot in itself lead to a conclusion seeing as how incentive systems work in different ways in different companies.

Sales is an example where incentives and bonuses are widely used, and there is evidence of its success. Many sales-jobs are based on commission or a combination of a monthly salary and commission or bonuses if results are achieved or exceeded. Sales is a performance-based profession, and as they in addition think for a living and often have a higher education, they are considered knowledge-workers as well. Stock-brokers are also defined as knowledge-workers and salespeople, and their jobs are highly performance-based. It is argued that the higher the incentives and bonus possibilities, the harder one works to achieve results, which again justifies the possibilities for having very high wages and bonuses. Working in sales may be compared to investing in stocks; the risks are high – one may not achieve in selling anything, but the rewards are equally high upon success.

Other critiques to individual bonuses and incentives, is the de-motivation effect it may have when and if they stop coming, either based on cutbacks or plainly not achieving the goals. Motivation may revert and be even lower than before the incentives were introduced. Also, it may indirectly drive employees to resort to abusing their own efforts by compromising their own as well as the companies' values or ethics. Hereunder, down-prioritizing customer satisfaction by stretching boundaries may act against the initial purpose of reward-systems.

Research also argues that autonomous workers, hyper-motivated, and highly educated employees are no match for an incentive reward system. Their inner drive, sense of achievement, purpose of accomplishing something – will mostly always be the winning factors when discussing their motivation. They feel satisfaction when their tasks are completed, they're proud when

contributing to innovation, and not being controlled and measured on every level, increases the level of work affiliation and satisfaction, exceeding way beyond normal office hours (Kuvaas 2008).

Other researchers argue the fact that simpler jobs with relatively lower wages, as well as lower educational levels, find tangible bonuses as main contributors to job satisfaction. The bonuses were perceived as having a high instrumental value that was worth extra effort. This in turn translates to increased performance, since there are no real needs for development in knowledge, skill acquisition, or strategic development (Stajkovic and Luthans 2001).

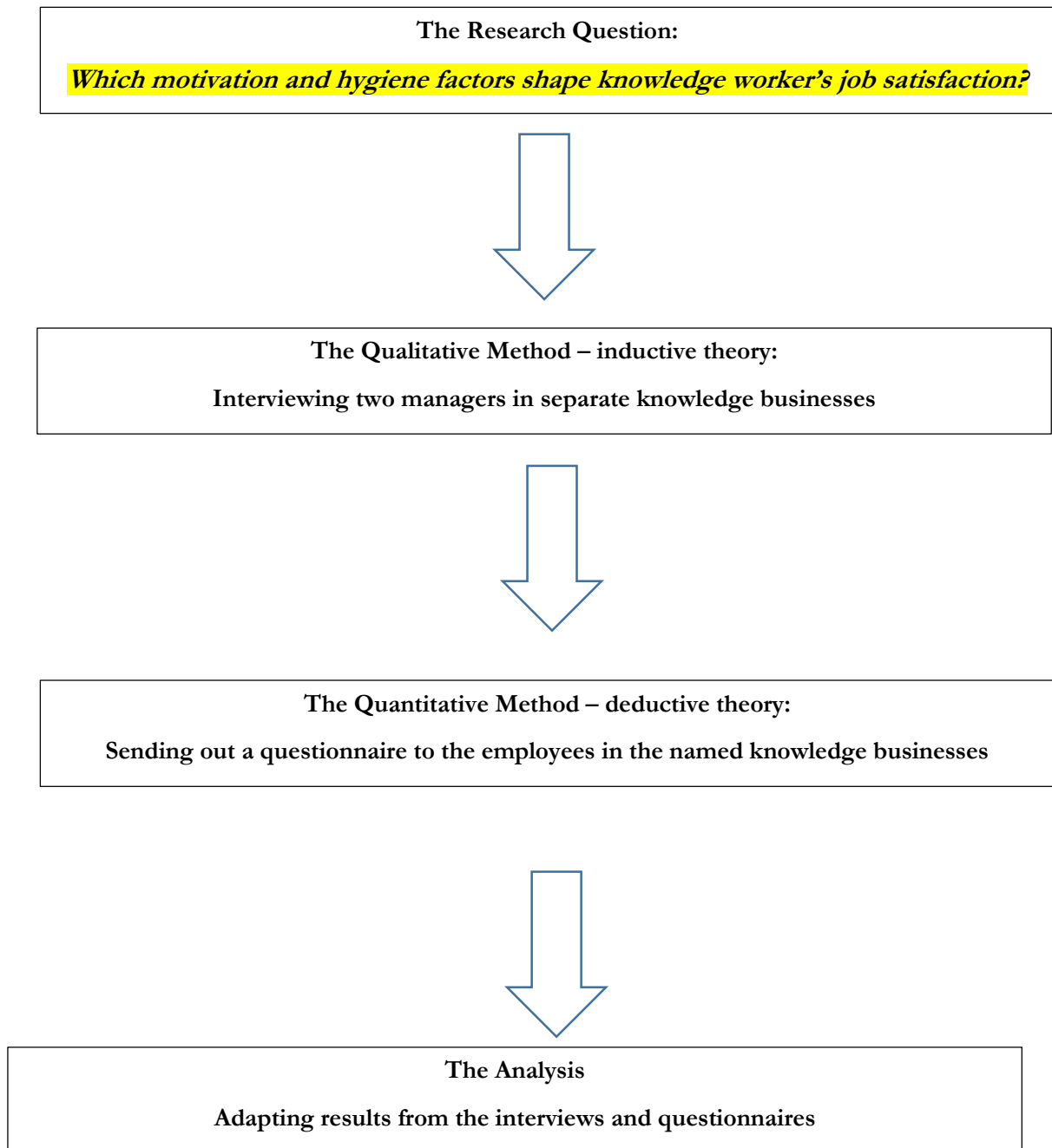
However, there are discussions back and forth on the effects of incentives, social recognition, and feedback, which makes the founding of a conclusive opinion an extreme sport. The variety in personalities, in industries, amongst employees, work tasks, and interests will act as a limitation to making a final strategy. However, in motivation and job satisfaction, the assumption being formed is that there is an executive norm, being expedient to follow, helping knowledge managers have a certain idea on how to lead and motivate their knowledge workers.

When processing the results from the survey, the main interests will not only be what motivates and contributes to job satisfaction in each company, but also comparing the two to each other, as they are both knowledge businesses but have completely different types of tasks and employees. In addition, being able to see what groups within the companies have answered based on background and education level, will be interesting in order to define previous assumptions of the differences in motivation which may be changing rapidly for the individuals.





### 3. Method



In this research process, there has been usage of both qualitative and quantitative nature. Two companies are applied as research material where there has been an interview process of top leaders in the two. The interview objects, object A and B, were carefully selected, interested in the nature of the research, and were willing to contribute with their time, information and employees. Access to their employees was essential since they contributed to the quantitative part of the

research. A questionnaire was formed for the two companies and sent out to each of the 60-80 employees (137 total).

The reason I chose both methods was the need for both types of information. The thesis emphasizes the curiosity regarding knowledge-workers and their job satisfaction. Asking the knowledge workers directly about it solely through a questionnaire would not necessarily give me the proper depth developed in the survey. Only when discussing this with their supervisor and leader, there were possibilities in unveiling possible factors which are important to the questionnaire's relevance. The main strength of choosing a qualitative method, is having the ability to study situations which are not available elsewhere. Having first-hand information directly from the source is an advantage when further developing the quantitative survey and it makes it better founded. Being able to answer 'how', 'what', and 'why', were essential parts of this research. If I had only used quantitative methods, I would have deprived the results from being thoroughly explained and understood. In this case, the qualitative research process was used mainly on an exploratory stage, as the interviews laid down preliminary groundwork for the quantitative questionnaire (Silverman 2011).

I have used both deductive and inductive theory since mixed methods have been executed. Collecting quantitative data through the survey clearly indicates a usage of a deductive theory construction. Interviewing the two knowledge leaders and observing changes and patterns in our service society through these conversations, indicate the fact that I have used inductive theory. This also helped me establish the types of employees and managers there is a demand for. I was interested in seeing patterns and figuring out the reasons for these trends. The research is based on a naturalistic paradigm, where the informants' view on their reality is used as background. This indicates that their responses and perceptions gave me grounds to further prepare the theoretical principles and assumptions. The interviews are further based on a subjective understanding which is imperative to take into account as I am entering the natural contexts of the informants (Babbie 2012).

Under the inductive theory, the preliminary assumptions were formed based on the qualitative interviews. These will most likely be confirmed or denied after receiving results from the deductive theory; the questionnaires. I started with the inductive theory; interviewing the two managers in order to better develop the survey questions, then phased into the deductive part of the research where the survey was distributed. I used its results in order to confirm or adjust previous assumptions formed during the inductive theory construction. In addition, forming new theories and assumptions as one goes along and forming opinions based on what the results tell,

opened up for possibilities of extensive and further research. Though both models are idealized for linking theory and research, social sciences may introduce theory merely as background for empirical analysis, or to strengthen theoretical arguments (Babbie 2012).

### 3.1 The Qualitative Study

**The Qualitative Method – inductive theory:  
Interviewing two managers in separate knowledge businesses**

Gathering the correct information in the most sensible way is a determining factor in doing research studies, and according to Johannesen et.al (2011), it all begins with an area of reality on which one wants more knowledge about. It is all about curiosity. One has to have a general interest in the area, as well as a desire for digging deeper than how one looks for information on a daily basis.

A semi-structured, in-depth interview was the qualitative method which I used in this research. Open-ended interviews do not require any special skills, however, being an active listener can not only make the respondent feel safe and heard, but it could also help me uncover things said in-between the lines and interpret body language. It is also collaboratively produced since both the informant and I contributed to the conversation, though my influence steered the conversation without neither laying words in the subject's mouth, nor having pre-determined assumptions. The respondent elaborated based on how the conversation was being had (Silverman 2011).

The main reasons for choosing the interview in this research was the level of freedom which I desired in terms of the informant's answers. When discussing motivation and hygiene factors seen from the supervisors' vantage point, the importance lie mainly around his impressions, historical knowledge, knowledge about the employees, specific actions related to the subject, and based on employee feedback. Furthermore, a previous study on motivation of knowledge workers performed by Horowitz, Heng, et.al (2003) implied that using a qualitative method, semi-structured interviews and/or focus groups, "would shed more light on this area." Which confirmed my thoughts on the method I chose.

I developed an interview-guide to be used as a guideline for the conversations, but overall, the informant had a unique way of communicating the answers. The same interview-guide was used

in both interviews, which sets a standard. Even with a standardization, the interviews were different, but there was little difficulty in comparing the two interviews. In addition, having a template helped me adhere to the specific subject. The questions were thoroughly thought out, and social conversations were minimized. Furthermore, interview is an economical method in terms of time and resources, and the ability to access information first hand is an important part of getting correct information. As the interview objects were managers in organizations where they have many responsibilities, their time during a “normal” workday is scarce.

In the case of this master thesis, neither focus groups, observations, text-analysis, nor grounded theory would give the research the type and the degree of information that was needed in order to perform the specific research<sup>8</sup>. The main objective with the qualitative method was mapping out peculiarities within the two companies, which can best be uncovered when having a conversation with the people in charge. On this account, semi-structured interview was best suited for these types of interviews.

If I had chosen a more structured Q&A session, I would eliminate the possibility of uncovering peculiarities in the companies, and having only a couple of open subjects, would not help me answer the research question. In the qualitative part of this research, using open-ended interviews served its purpose due to the personal conversation with the interview object, and allowing the interview object to answer freely with a semi-structured framework.

Another researcher may have uncovered different answers from the interview object as one has different conversational skills: communication, understanding, and perception. Performing interviews is considered an art form, and researchers perform this task differently, which ultimately affects the responses that are being collected. This specific research may even have received different results in a year or two from now, as the interview object is subjected to personal opinions and external influences. Other possible weaknesses with performing an interview can be the interaction between interviewer and the informant as communication can be misinterpreted and incorrectly perceived. The interview object may misunderstand the interviewer and vice versa. What an interview produces is a particular representation of an individual’s views and opinions (Johannessen, Christoffersen et al. 2011, Silverman 2011).

The interviews were recorded as agreed upon between the informants and myself, and the results were kept confidential and names were anonymous. All in line with keeping the respondent as comfortable as possible in his role as the interview-object (Holme and Solvang 1986).

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<sup>8</sup> Using a Focus group on the two informants would be more limiting than opportunistic, Observations would be too time consuming, Text analysis would simply not qualify, and Grounded theory would not give me proper insight.

When constructing the interview guide, my focus was primarily to get a deeper understanding of the managers, the business model and the company culture in the two companies I had selected. I also wanted to uncover peculiarities within the two companies which would generate additional and specific answer alternatives to the general questions developed in the survey. In getting to these factors, it was important to establish a relationship with the interview object and getting to know the person and the company better. In addition, the importance of presenting the research and the thesis in a clear context was imperative, as the interview object's understanding of the goal of the research would help in responding constructively to the questions. The interview objects were informed of their role and how the interview was voluntarily, asked if it was approved that the interview would be recorded but deleted when finished with the research, and informed that they would receive a final copy of the master thesis upon its completion. They would also be able to revise statements written about them before the thesis went to print.

After the introduction, I started asking questions about the manager related to his background, main areas of expertise, specific tasks within the department/company, and the type of business model the interview object operates within. Further elaborations were encouraged about the employees, who they are, what they do, and determining factors for employment. This naturally transitioned into the question on how the interview object manages knowledge workers, and the main challenges in having employees being autonomous and hyper-motivated.

Following this, the main and most important part of the interview took place, and the interview object was answering what, through his perception, were the main motivation- and hygiene factors contributing to their employee's job satisfaction. The main goal with this specific part of the interview was opening up for a dialogue between the interview object and the researcher with focus on motivation and job satisfaction. There was little structure around the few pre-determined questions in order to facilitate the possibility for the informant to feel completely uninhibited in his responses. I wanted him to steer the conversation in the desired direction.

Having the managers determine this, opened up for establishing a more correct way of asking questions in the survey. After learning about the companies and the managers, I had more insight into how they operate, what they specifically focus on, and I became in possession of some inside information helping me formulate questions.

At the end of the interview, the dialogue turned towards any elements that the interview objects meant were important to the survey as well as how and when the survey would best be

distributed. Both managers were interested in promoting the survey and distributing the survey internally, assuming that this would generate more credibility with their employees and ensuring the anonymity of the respondents as their email addresses would not be shared.

I completed the interviews in the first week of August of 2015, mainly in order to not occupy the managers' time further, but to also have them completed before preparing the surveys and distributing them as early as possible in order to allow ample time for analysis. Both meetings occurred immediately after their summer vacation, before the new fall term had taken its toll on their time. I met them where they work and the interview occurred in a meeting room. I did not consider conducting the interviews elsewhere, as it was important to not lay unnecessary claim on their time. In addition, one can argue that they felt more comfortable in their proper "homes" versus taking the meeting elsewhere. The interviews varied in time from 60-75 minutes.

As soon as I had completed the interviews, I listened to the recordings, transcribed the interview, and reviewed the conversation while it was still "fresh". Then, I started the process of preparing the survey, and based on the inductive theory being unveiled during the qualitative part of the research, there was now time for the deductive and quantitative part of the research process.

(The Interview Guide may be found under Attachments)<sup>9</sup>

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<sup>9</sup> Attachments p. 92

### 3.2 The Quantitative Study

#### **The Quantitative Method – deductive theory:**

**Sending out a questionnaire to the employees in the named knowledge businesses**

To gather further results on the thesis question, I integrated quantitative method with the qualitative research. Using mixed methods was relevant since it was possible to analyze different parts of the research question in a more thorough way. There could have been some assumptions linked to the overall thesis which would have been destructed during the interview process. There might even arise new assumptions along with the interview, and these would have been confirmed or denied during the quantitative analysis in form of the questionnaire. Combining these two may increase the likelihood of unanticipated outcomes, and being able to attack the research questions from two angles can result extremely valuable (Bryman 2006).

The focus in quantitative research is units and variables, which may create a distance between the researcher and the respondent(s), and there is no room for interpreting data “between the lines.” Many researchers rely solely on quantitative research and define its results as the one and only truth. However, this can be misleading and it can open for possibilities of abusing data. Even if it is put in numbers, it is not necessarily the whole truth. Though working with the data collected in a quantitative study is more concrete then in a qualitative study, there must be taken assumptions on the data gathered (Holme and Solvang 1986).

Other potential weaknesses with a survey in quantitative method, is the interpretation of the questions by the respondents. Since irrational human beings have different frames of references, there will always be room for misunderstanding and misinterpreting when reading questions. In addition, having to choose only one answer may limit the respondent in being able to answer with complete honesty. The fact that the survey is anonymous, opens up for the possibility that it is answered personally and privately, and the respondent may answer according to what he or she perceives as expected of him/her, and what would make his/her total response appear in a specific way. In other words, I cannot ensure the total absence of dishonest answers.

Most companies perform co-worker satisfaction surveys every year, and I could have been allowed access to these responses over the course of the last 2-5 years, and used this as the quantitative data for my master thesis. However, this would deprive the thesis from having the preliminary foundation in Herzberg’s Two-Factor Theory, an important element in the research,



as well as not being as relevant, taken into consideration the fact that the employee base may not be the same during the research period vs. the time of collected data. Furthermore, the survey will be more focused and specific when it is based on the interviews, I have information directly from the managers which will help develop a well-founded questionnaire narrowing the target instead of being too extensive. Basing the survey on own research helps me achieve high validity in form of answering my specific interest and research question and designing it the best way I see fit.

One can argue that focus groups, as a qualitative alternative, would be another way of getting to know what the motivation – or hygiene-factors of the employees were, but the number of respondents would be less, the validity of the results would be weaker, and it would be extensively time consuming. On these grounds, I determined the choice in developing a questionnaire based on the interviews to be the most rational and expedient method.

### *The Questionnaire*

I developed the questionnaire based on Herzberg's "Two Factor Theory" (Herzberg, Mausner et al. 1959, Herzberg 1968, Herzberg 2003) in order to determine motivation and hygiene factors which affect knowledge workers regarding their job satisfaction. However, I did not use the same type of questionnaire,<sup>10</sup> which was used by him when he first developed his motivation/hygiene theory. The reason for this was the complexity of his survey; he sent out a "patterned interview" where the respondent was to "think of a time when you felt exceptionally good or exceptionally bad about your job..." with fourteen follow-up questions which he then coded, analyzed the wording and placed them in motivation/hygiene categories (Herzberg, Mausner et al. 1959, p. 141-150).

Based on the qualitative interviews already performed, I had the possibility of defining the questionnaire fitting each company according to their distinctiveness. Creating the questions was a process extending over the course of two weeks, and during one workday, I could have solely produced one new question with answer-alternatives. This underlines the thought process invested in each question and the extent of the underlying importance to having both motivation factors and hygiene factors present in questions addressing job satisfaction in various forms. Alongside the construction of the questionnaires, I experienced many processes linked towards the theory and foundation determining motivation and hygiene factors, and though challenging,

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<sup>10</sup> It appeared to me, that Herzberg sent out a structured-interview questionnaire to his respondents

these processes contributed to both an increased sense of knowledge and understanding around the thesis, as well as an impression that the final product was satisfactory.

The survey included the final operationalization of the research question. The form of this is not random, and the template, questions, and answer formulations may affect the way the survey is received by the respondents. The research question, along with a clear idea of what I wished to answer, is an essential part of the process (Holme and Solvang 1986).

The first step in the questionnaire was the mapping of the respondents. This had to be included so it would be easier to analyze the data once it was received. The respondent's country of origin, age, education level and seniority in the two companies were requested in order to be able to draw possible similarities or inequalities between the respondents. This was not done by Herzberg, and for future references, I too would have limited this part only to education level and gender in order to satisfy the research question. After this first part of the questionnaire, the questions regarding motivation and hygiene factors were initiated. The first parts of the answers were directly collected from Herzberg's theory<sup>11</sup>, and the factors indicated in his research was rendered in the questions. Thereafter, the answers were adjusted towards the specific company, using the material that I gathered during the interview process. When forming the questionnaire, it was imperative to narrow it down in order for the questionnaire not to be too extensive (Johannessen, Christoffersen et al. 2011).

The main questions regarding the thesis were developed as statements in which the respondents could evaluate the level of application to their own being. Since the research question specifically wants an answer to knowledge-workers motivation and hygiene factors, it was essential that the answers were just as specific. In some cases, it will be expedient to let the respondents answer "other"<sup>12</sup> and fill out themselves, but the level of analysis and comparison may be more difficult when allowing this. I limited the scale of response which is an essential decision taken on the grounds of not receiving too vague information. Using a 10-point scale would have been too detailed and using a 3-point scale could have deprived the respondents of answering truthfully. Having the possibility of not having to choose the extremes, might diminish the possibilities for the respondents in choosing "non-applicable" or "I don't know" – since these are alternatives not generating satisfactory results. Therefore, I chose the option of using a 5-point scale and the respondents got an opportunity in grading their answers in a manner which helps them form an

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<sup>11</sup> Hereunder, the specific factors used in the initial theory

<sup>12</sup> This alternative was only used under education background to not limit the employees

opinion in a nuanced way. This also eliminates the respondents having a sense of not being able to answer (Johannessen, Christoffersen et al. 2011).

After the questionnaire was finished, I sent this along with an information letter to the two managers. Their distribution varied in execution, but both were involved personally. Company B's manager informed his employees about the survey in a staff meeting and the fact that a master student was researching them. He distributed the survey personally to all 75 respondents. Within the first day, 26 had answered the survey and after one week, the count increased to 38. At this time, the manager sent a follow-up email which generated additional responses. After two weeks and the end of the trial period, the final count was 54 respondents, or 72% which qualifies as "very good"<sup>13</sup> in terms of response rate (Jacobsen 2005).

In Company A, the survey was sent out five days later than Company B and the manager had sent the survey via email to the department coordinators, as he is in charge of several separate departments. Response rates started slowly, and in the first week, there were only 26 responses. The number of respondents in Company A was 62, and the percentage was less than satisfactory this first week. Because of this, the manager sent out the follow-up email himself, describing the importance of the survey and the fact that this was a master thesis researching them, and urging his employees to participate in the survey. Within three days<sup>14</sup>, the response rate grew rapidly, and on the final day of the survey, the total response rate from Company A was 46 respondents, or 74%. I was inclined to assume that personal involvement from the manager played an essential role, as Company B's response rate grew rapidly after receiving email from their supervisor, whereas Company A's response rate was slow until the manager sent out an email personally and generated a significant change in responses.

The total number of questionnaires being distributed in both Company A and B were 137. Number of total responses was 100, or a cumulative response rate of 73%.

(The Questionnaire, the initial e-mail and the follow-up email may be found under Attachments)<sup>15</sup>

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<sup>13</sup> Over 50% = Satisfactory  
Over 60% = Good  
Over 70% = Very Good

<sup>14</sup> Date of survey period Company A: August 31. – September 10. Company B: August 26. – September 10 in 2015

<sup>15</sup> Attachments p. 93

### 3.3 The Analysis

#### The Analysis

##### Adapting results from the interviews and questionnaires

When analyzing the interviews, I transcribed the recorded audio I had acquired during the interviews. I took notes in order to emphasize important topics that were discussed by the informants. To found my analyzing method in a theory, one can argue that I have used elements from thematic analysis when working with the data from the informants (Silverman 2011, Kuckartz 2014). As the research question had concrete indicators which needed to be discussed in order to exert a well-completed survey, I had to uncover these same indicators with the informants, categorizing their answers as well as finding similarities and inequalities between the two companies. I succeeded in identifying topics including knowledge workers, knowledge management, motivation factors, and hygiene factors and was able to use these further in my results as well as the survey I was developing. This part of the analysis was completed before I had sent out the surveys, since its results would contribute to the completing of the questionnaires. This underlines the fact that I performed separate data analysis; qualitative and quantitative, and at different times.

I developed the questionnaire in a way which gave the respondents alternatives ranging from the numeric values of 1-5 but presented in literary form with statements fitting the question. The alternatives used were; Very important (5), Relatively important (4), Do not apply/Not relevant (3), Relatively unimportant (2), and Completely unimportant (1). These alternatives were used for the first two questions which mainly focused on motivation factors and hygiene factors. The alternatives Strongly agree (5), Agree (4), Indifferent (3), Disagree (2), and Strongly disagree (1) were used when presenting motivation and hygiene factors *affecting* the employee's job satisfaction and statements regarding the employee's *experience* of satisfaction. Very inspiring (4), Somewhat inspiring (3), Irrelevant (2), and Do not inspire at all (1) were used when answering what factors inspired performance. The last question invited the respondents to rank certain factors which were important for the respondent in working at their current workplace. The employees were asked to arrange the given factors from 1-10, where 1 being most important and 10 being least important. This was clearly the most misunderstood question as very few of the respondents actually chose each number only once (which was requested), and the scale was also misinterpreted as some respondents chose many of the factors as being unimportant to their

choice for working at their current workplace, which contradicted earlier responses. I had not given numeric value to the earlier questions in Questback, so this could not have been the reason for misunderstanding the significance of the numbers.

The answers were exported as a raw data file from Questback and in to Microsoft Excel. Here, I had to manually code the answers in order to make them numeric and used the “IF” excel-formula function defining a numeric value to the given response. When this was completed, the Microsoft Excel spreadsheet was again imported to JMP 12, an analysis program downloaded for free and used to calculate the mean response for each questions. JMP 12 also gave me the standard deviation for all responses, and are also presented in the next chapter.

After this, I performed data analysis in Microsoft Excel using both the mean value and the standard deviations; t-tests and ANOVA to uncover p-values and statistical significance. I was interested in answering the research question; differentiating between motivation and hygiene, as well as the respondent’s education level and its effect on the answers. These results will be presented in the next chapter and discussed in chapter five.

### **3.4 Reliability**

Reliability is determined by how the investigation is done, and how precise one is when treating the data (Holme and Solvang 1986). Silverman (2011) refers to (Kirk and Miller 1986) stating that reliability refers to the degree to which the findings of a study are independent of accidental circumstances of the production.

Furthermore, Holme & Solvang (1986) states that one has a high reliability if there are independent researches performed, generating the same or close to the same answer. There may be error elements in the research, but the researcher doing a thorough job in diminishing these errors achieves high reliability.

When performing a reliability test on a questionnaire, one can either allow two researchers performing the same study, or sending out the same questionnaire twice to the same respondents at another time.

However, using these types of tests will not be transferable to a qualitative research. “Theoretical transparency” will play a far more central role, when discussing reliability in this case. This refers to the extent of transparency around the research strategy and data analysis, in order to supply a detailed description with no “hidden methods.”

In the case of the qualitative interview performed in this research, reliability can be emphasized through the fact that I used the same interview guide for both interview objects. A professional researcher revised the interview guide and its template matched those of previous interview guides, as well as partial examples from various textbooks (Holme and Solvang 1986, Jacobsen 2005, Johannessen, Christoffersen et al. 2011, Silverman 2011). The main purpose of the qualitative interview was having the interview object clarify what the researcher should be looking for when preparing the questionnaires as well as being part of a mutual dialogue where assumptions were formed around the motivation and hygiene factors affecting their employees' job satisfaction.

I recorded the interview, which ensured me the correct information used in the research and I did not have to base it on memory. The conversation was available to me long after the interview was performed.

When discussing reliability in the quantitative sense, the main way of testing reliability can be distributing a questionnaire to a group of respondents, receiving their answers, and re-distributing it after some amount of time to test the consistency in their answers. In this research, the test-retest method has not been feasible, but seeing as approximately the same questionnaire has been sent out to two different and independent companies, the responses have no way of being affected by each other making the reliability consistent. Furthermore, the questionnaire was carefully developed in a way to minimize the risk of questions being misunderstood, and asking more questions within the same question (Jacobsen 2005). In addition, there were 100 respondents and all answers were individual but within the same companies, there were possibilities to determine trends. In other words, they had understood the questions approximately in the same way, and the only thing separating the answers were naturally their own opinions, as intended.

A professional researcher reviewed the questionnaire, and two test people completed the questionnaire before distributing it. Seeing as both test persons understood the last question in the survey regarding the arranging of factors from 1-10 and their individual values, I had no indication that this question should have been prepared in a different manner. However, this specific question confirms the sensitivity in personal perceptions and understandings when answering the same survey. The researcher has only so much control over the wording, template, and design; but in the end; the human error cannot be accounted for.

If I had randomly selected two responses from each company in order to see if their perception of the questionnaire was in line with the intentions, there could have been a possibility for

choosing two respondents who had understood the last question, and I would be under the impression that this was the norm. Two respondents who did not understand the last question could also have been picked, and I might have thrown out the question all together under the assumption that it was not clear and its reliability was too low to include in the results. However, the choice for including this question in the results was grounded in the fact that presenting possible errors is an important part of a research process, and there can be interesting discussions surrounding misunderstandings as well.

### **3.5 Validity**

Selecting qualitative and quantitative research methods has been the essential part of designing this project, and there were no other methods which seemed expedient when developing a research question. I did not initially choose to apply mixed methods to ensure the validity of the research, but throughout the process this has indeed become the fact. As the findings uncovered during the interview processes formed assumptions and contributed to well-developed questionnaires, the results from the surveys backed up several of the assumptions and results originated in the interview (Silverman 2011).

Triangulation is defined as the rationale for using multiple sources of evidence. Using multiple research methods allowed me to look at a broader range of issues. Conclusions may be more convincing and accurate when based on different sources of information. This specific research has exercised triangulation of data sources and of methods. With data triangulation, potential problems of construct validity can be addressed due to the multiple sources of evidence; hereunder, interviewing two separate knowledge managers and distributing questionnaires to 137 knowledge workers (Yin 2009).

Using mixed-methods is an extensive and time-consuming way of researching, and the individual knowledge around both methods requires more from the researcher. There are arguments that the usage of mixed-methods prevents the researcher of becoming a master in one method and leads to only performing mediocly in both. Though this has not been my initial perception, I cannot see another way for me to perform this specific research and this was the basis for choosing both methods.

Validity can also be measured by seeing conformity with previous research. As the research question is mainly based on Herzberg's Two – factor theory, we have an indication on which way the results went when a similar research was previously performed. However, one of the

assumptions under this specific research is determining whether the theory from the 1950's is still relevant today, and one cannot draw specific similarities but rather indications. However, according to the findings from the qualitative interviews, the results from the questionnaires validate and confirm some of the assumptions, which gives the indication that the research, indeed, measured what was intended.

In terms of the validity in the qualitative interview, the interview guide was carefully developed and controlled, and I withstood from having predetermined opinions when entering the interview situation. Keeping an open mind and allowing the interview object to contribute to the conversation, only being carefully led by the prepared questions, allows the interview object to speak freely and discuss the questions asked. This method also limited my personal effect on the interview object, and offered free reign in discussing the research question in depths as the interview object saw fit.

The interview object did not receive the interview guide beforehand, but was presented with the research question which determined his interest for contributing to the research. The companies which were analyzed had already a clear perception of the key terms in the research, being knowledge businesses as well as having focus on motivation and job satisfaction.

In terms of the questionnaire, its validity could have been utterly emphasized if I had similar questionnaires about motivation and job satisfaction available in order to perform a comparison to previous surveys. However, as the two companies are vastly different, and these types of questionnaires usually are disclosed material, this was not available to me. The differences in my survey and previous worker-satisfaction surveys would be prepared differently and limit the direct comparison needed.

An important factor to discuss in the validity of the questionnaire is the possibility for both human error and human manipulation (Silverman 2011). As the questionnaire presented motivation and hygiene factors, there is the possibility that some respondents answered based on what was expected of them. This may originate in a company culture where one is expected to be motivated by intrinsic factors and that it may be "incorrect" to be driven by tangible factors, these being salary, office space, or the likes. To ensure the minimization of this type of error, I reformulated the questions in different ways in order to map out how the respondents actually think. Though one can interpret this as unprecise, it has to be taken into consideration that this specific research may not offer a defined and underlined answer, but present different nuances, approaches and views supporting or contradicting the original theory.



By combining qualitative and quantitative research methods, the researcher's claim for validity of the conclusions is enhanced if they can be shown to provide a mutual confirmation (Bryman 1988). In other words, if one suspects falsifiability in one of the research methods, the other may confirm or decline this. If there is a case of human manipulation in the questionnaires, the assumptions drawn out from the qualitative interviews may help the researcher discover this and consider it. In addition, as the response rate was as high as over 70%, the internal validity concludes relatively safe in this matter.

### **3.6 Research Ethics**

The informants in this study were carefully selected, as they fulfill the 'knowledge manager' description being essential to this research. They were closely informed during the preparation of the studies and they knew what they agreed to when the process started. However, it was important for me to keep their names and their companies anonymous for several reasons. First, though they have not released sensitive information, it is ethical to keep their identities discrete as the thesis will be available online after it is submitted. Their employees and competitors may get ahold of the thesis, and it was important to prevent possible conflicts in the future. The respondents are also kept anonymous from the research as well as their managers in order to answer freely during the questionnaire. There will be no possibilities for these two informants to trace answers back to their employees.

The informants as well as the respondents have received the right to informed consent, and their participation has been optional. The informants notified their employees of the fact that there was a master-student researching the companies and that they had agreed to participate. The factors being used in informed consent include giving information about the research which was relevant to their decision making, ensuring that the subjects understood the dimensions of the research, and ensuring the fact that participation was voluntarily (Silverman 2011).

In addition, I chose to send the thesis to the interview objects asking them to perform respondent validation and confirming that information given about their companies in the thesis is correct. This has been chosen in order to ensure both proper research ethics, as well as validity.

## 4. Results

### 4.1 Qualitative results; the Interviews

In the two qualitative interviews, I met the interview objects at their work place, and performed an open ended, semi-structured interview based on the interview guide<sup>16</sup>. The conversation started out with small-talk in order to feel out the situation and establish a positive setting. I then asked the informant to elaborate about themselves, their job, their background and their work tasks. Having people introduce and talk about themselves, promotes a low threshold and the complexity of the interview starts out on a basic level (Johannessen, Christoffersen et al. 2011).

#### 4.1.1 *The Interview Objects*

The manager in Company A is a research-director for three separate departments. Their business model is 100% project oriented. He attended University of Oslo and received his PhD at this university in 1991. He kept working at the university with different research projects. After this, he started his own company where he worked for four years but returned to the university for a while before he started working with company A in 2000. He started as a sector leader, and has advanced in ranks throughout his years. Four years ago (2011), he received his position, in which he is in possession of today, as research-director.

The interview object in company B was a young CEO with a background in information technology and 10 years of experience with advertising, who started working in the digital department in company B in 2007. He worked one year there before the board approached him with the request to take over as CEO. Company B operates under a consulting business model where they act as consultants for advertiser. In this case, the most important trait with his staff is the ability to create solutions that are not only competitive in the market, but also tailored to meet the clients' very specific needs.

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<sup>16</sup> See Interview Guide, page 89

#### 4.1.2 The Employees (Respondents in Questionnaire) in Company A

The employees in company A are mainly researchers with PhD degrees, post-doc positions, as well as engineers and technicians with bachelor's or master's degrees.

According to interview object A, his employees are dedicated and interested in their jobs, but their capabilities are not necessarily superior to other workplaces because of their education level.

*“People who are interested in their field usually do a good job, and the most important thing is that they thrive in their workplace.”*

- Interview object A

His employees are mainly interested in Research and Development (from now on R&D), but there are different personalities gathered in one place; some are interested in recognition from the scientific environment, while others are more interested in contributing to making the world a better place. Some employees stay employed because of the job security. Some of his employees are very autonomous- They may create growth and expansion around themselves and only need minimal supervision, while some, though they are few, needs to be guided through each day.

*“Developing our knowledge and expertise is a continuous process. My employees have access to many academic journals; they publish their work, and attend conferences where they meet colleagues within research and the industry. These conferences are most important in order to make new contacts and potential research-project partnerships.”*

- Interview object A

His main job is helping employees focusing on the right projects and assisting them in their projects through infrastructural facilitation and determining which research projects are the most relevant to the industry. This indicates Interview object A using the HRPLTA<sup>17</sup> strategy discussed in chapter two, operating as a facilitator instead of a “boss” in the traditional sense.

*“I do not actively “manage” the employees who are dedicated and autonomous. I provide the infrastructure, and the assistive technology, which is needed for their research. In addition, I am present in meetings they have and show that these specific projects are important to us and help them build relationships with new clients.”*

- Interview object A

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<sup>17</sup> Hire the Right People and Leave Them Alone

The employee turnover is very low at company A, with employees ranging from 10-20 years in seniority though lately they have gone through a restructuring process in the whole company, where they had to retire some employees early. Almost 40 employees received a severance package that proved to be economical for both parties<sup>18</sup>. Naturally, some departments housed older employees than others that were those in need of a restructuring.

During the interview, I got a clearer picture when discussing management of hyper-motivated and autonomous knowledge workers. Motivation and job satisfaction is therefore a complex picture and based on this, there were assumptions formed to support the research question. Hereunder are some assumptions formed for company A.

*Assumption: The importance of hygiene factors in terms of both satisfaction and motivation*

The traditional hygiene factors defined by the theory includes salary, office space, colleagues, flexible hours, and infrastructural facilities were assumed to play a more important part in employee motivation than previously determined by Herzberg's theory. In many R&D projects, the infrastructural facilitation may prevent the employees from actually performing their job and the work space is also an important factor. Cooperation between the employees and a strong, positive work-culture plays a role for performing according to the business model, so the relationship with colleagues is essential for motivation as well.

Based on these main findings during the interview, additional information and factors were included in the questionnaire. Though this assumption contradicts the main theory, the research question was strongly kept in mind and present during the interview process and when receiving the results from the questionnaires. In addition, based on previous research (Story, Hart et al. 2009), there are indications that hygiene factors indeed contribute to motivation and job satisfaction, and therefore the research is particularly interesting as there may be confirmations of these types of literature.

*Assumption: The answers from the respondents may vary based on education background*

The fact that there is a large span of employees and backgrounds, mainly having everything from upper secondary education to those with a PhD, helped form the assumption that there were differences in the responses based on this. The fact that the employees have different types of jobs based on their education level, is assumed to be visible through the questionnaire. An employee with a bachelor's degree working in the administration is assumed to answer differently

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<sup>18</sup> These employees were not employed in Interview Object A's departments, but other sectors in the company.

on questions regarding “own research,” than their PhD colleagues. Furthermore, the previous research based on (Eskildsen, Kristensen et al. 2004) establishes differences in education level regarding motivation and job satisfaction. Which made me curious towards this being the case in this research as well.

#### *4.1.3 The Employees (Respondents in Questionnaire) in Company B*

The employees in company B have mainly bachelors or master’s degrees in business and administration, marketing or economics, to name a few. They are analytical, interested in the business and want to expand their capabilities and knowledge within the industry. They are also hyper-motivated and autonomous and the manager’s main role is delegating, inspiring, and contributing to feedback.

The employee turnover for company B is higher than in company A, as many use this job as a stepping-stone to other industries, but on average, they stay employed five years.

*“Creating results, and professional development, is a strong driving force. The employees are ambitious on behalf of themselves and the clients.”*

- Interview object B

In terms of motivation factors, the manager of company B is very interested in helping his employees develop themselves and expand their client portfolios. When pitching ideas to potential clients, or in order to keep existing clients, he is very involved in the process though the employees perform the job itself. Their hierarchy is based on a flat line concept and he is very aware that many of his employees have knowledge in their field which exceeds his own in that specific field.

They have recently changed head-quarter locations. They are now operating under the “free-seating” concept, which has eliminated personal offices, and assigned spaces. Each employee has a locker, in which all their personal belongings fit, and they choose a new desk every day. This has opened up communication and cooperation across departmental borders, and the company hierarchy has been eliminated, as Interview object B, himself, also changes space every day and sit amongst his employees as a peer. He has opened up a broader communication with his employees, and has had the opportunity of getting to know them better and under different circumstances, which in turn helps him lead them in a more constructive manner.

The assumption formed during the interview with company A, was contradicted during the interview with company B, and I was presented with the fact that the employees were more

driven by intrinsic than extrinsic factors. However, as the educational background is not as widespread, the following assumption was formed:

*Assumption: The respondents' answers do not differ as much based on education background*

The reason for underlining this assumption is that the internal focus on education background is not as transparent in company B, as few of the employees are mainly educated in the trait being used in this company. Though economics and marketing are important factors in the company, there is more to the “trait” of this company specializing them in this. Therefore, one can assume that all employees, regardless of their educational background, have the same opportunities in developing their skills. Whether education level has an impact on the employees’ motivation and satisfaction is assumed to contradict the previous mentioned research by Esklidsen et al. (2004)

This supports the basic theory by Herzberg in a greater sense. Having researched two different companies generated conclusions with obvious differences. Both companies are knowledge businesses and the interview objects set a standard for their employees which can be seen in terms of their own perceptions of motivation and the confirmation of the assumptions in the questionnaire. There are great indications that the manager knows his employees well and that motivation and hygiene factors uncovered during the interview, applied to the respondents of the survey. However, as both companies employ knowledge workers with higher education, they were somewhat coherent in terms of answers.

The survey gave an indication to differences between company A and B as well as differences within the two companies based on education level. Their results are presented in the next section.

## 4.2 Quantitative Results; the Questionnaires

Receiving as many as 100 answers out of 137 is an answer percentage of almost 73%, which is, as mentioned in chapter 3, very good and ensures a strong validity (Jacobsen 2005). There were possibilities to categorize the responses by gender, age, nationality, educational level, and length of employment. Since the research question asks which factors shape knowledge workers job satisfaction, the results would have to answer this. Previous assumptions formed after the qualitative interviews were completed would also be essential to answer. As there were two companies being researched, both having their own assumptions related to them, the choice fell upon comparing within the companies.

### 4.2.1 Presentation of the Respondents

The following table will present who the respondents were, based on gender, age and educational level.

*Table 1: Presentation of respondents*

Company	Education level	# of respondents	Total Company	
Company A	<i>Bachelor</i>	5	46	100
	<i>Master</i>	12		
	<i>PhD</i>	22		
	<i>Other</i>	1		
	<i>Upper Secondary</i>	6		
Company B	<i>Bachelor</i>	27	54	
	<i>Master</i>	22		
	<i>Other</i>	2		
	<i>Upper Secondary</i>	3		
<b>Total Respondents</b>				<b>100</b>

### 4.3 Answer results from the Questionnaire

#### 4.3.1 Motivation and Hygiene factors affecting Motivation by Education Level

The first question asked the employees to determine the importance of given factors affecting their *motivation*. This question was formed in order to present predetermined motivation and hygiene factors, and introduce factors which were uncovered under the qualitative interview with the informants in company A and B. The respondents were asked to rank each factor on a five-point scale between Very Important to Completely Unimportant. These responses were numbered when received, and were ranked from respectively (5) to (1). Table 2 shows the factors and the mean ranking of this question in company A. The respondents were not aware of which factors were predetermined as motivation or hygiene.

**Table 2: Question 1 - factors affecting motivation - Company A**

The following factors are the most important for my workplace motivation:					
Company A					
Motivation factors	Upper	Bachelor	Master	PhD	Other
Achievement in my job	4,50	4,40	4,42	4,77	2,00
<i>Std. Dev</i>	0,55	0,55	0,52	0,43	0,00
The work itself	4,17	4,60	4,00	4,45	5,00
<i>Std. Dev</i>	0,41	0,55	0,74	0,60	0,00
My areas of responsibility	4,17	4,20	3,83	4,00	4,00
<i>Std. Dev</i>	0,41	0,45	0,58	0,69	0,00
Possibility of growth	3,50	3,80	4,17	4,23	5,00
<i>Std. Dev</i>	0,84	0,45	0,58	0,43	0,00
Contributing to research and development	3,17	4,00	4,50	4,59	5,00
<i>Std. Dev</i>	0,75	0,00	0,52	0,50	0,00
Developing new technology	3,00	3,00	3,83	4,05	5,00
<i>Std. Dev</i>	0,63	1,00	0,84	1,17	0,00
Individual research	2,83	2,40	3,17	3,32	2,00
<i>Std. Dev</i>	0,75	0,89	1,34	1,32	0,00
Working towards a better future	3,50	3,60	4,33	4,09	5,00
<i>Std. Dev</i>	1,05	0,55	0,78	1,02	0,00
Hygiene factors	Upper	Bachelor	Master	PhD	Other
Recognition	4,00	4,20	4,17	4,14	5,00
<i>Std. Dev</i>	0,63	0,45	0,84	0,47	0,00
Advancement	3,17	2,60	3,25	3,27	4,00
<i>Std. Dev</i>	1,17	0,89	1,06	1,20	0,00
Status	2,83	2,60	2,75	2,59	3,00
<i>Std. Dev</i>	0,98	0,89	0,97	1,47	0,00
Salary and benefits	4,00	4,00	3,25	3,50	4,00
<i>Std. Dev</i>	0	0,707	0,866	1,01	0



For company A, the mean values were mainly ranked in the upper response area and the differences between education level did not differ as much. Looking closer at the mean results, the variations for motivation factors were smaller at a Master and PhD level than at the lower education levels. Under the category “Other”, there was only one respondent, which made the standard deviations 0. The remaining categories have small standard deviations indicating small differences between the answers of the respondents. When analyzing table 2 even closer, it is possible to see increasing trends based on education level under the following factors: Possibility of Growth (3,50 – 4,23), Contributing to research and development (3,17-4,59), Developing new technology (3,00-4,05), Individual Research (2,83-3,32), and Working towards a better future (3,50-4,33)<sup>19</sup>. In turn, Salary has a receding trend (2,83 – 2,59) under the hygiene factors.

Individual research scored relatively low from respondents with a Bachelor, “Other” or Upper secondary education. Advancement and status were ranked lowest amongst all groups when analyzing hygiene factors.

After performing several t-tests to further analyze the differences, there was uncovered very few significant p-values between groups of respondents in this question. However, four comparisons indicated differences in responses between education level that can explain the above mentioned increase/decrease trends. Motivation factors between Bachelor and PhD respondents (0,027), motivation factors between PhD and Upper secondary respondents (0,012), hygiene factors between Masters and “Other” respondents (0,017), and hygiene between PhD and “Other” respondents (0,009). Their p-values are presented in table 3, which also presents the p-values of the other t-tests conducted which are indicating no differences of significance between the responses given by the other comparison groups.

*Table 3: P-values question 1 - Company A*

	P-Values	
	Motivation	Hygiene
Bachelor vs. Master	0,187	0,989
Bachelor vs. PhD	<b>0,027</b>	0,924
Bachelor vs. Other	0,468	0,118
Bachelor vs. Upper	0,314	0,430
Master vs. PhD	0,072	0,823
Master vs. Other	0,838	<b>0,017</b>
Master vs. Upper	0,078	0,534
PhD vs. Other	0,897	<b>0,009</b>
PhD vs. Upper	<b>0,012</b>	0,470

<sup>19</sup> Although in this specific case, the mean value dropped with the PhD respondents

As there were increasing trends from Bachelor level to PhD, there will naturally be some differences between the lowest and the highest group. A significant p-value emphasizes the importance of this in question one.

Herzberg claimed that there were differences between the importance of motivation factors and hygiene factors when the question referred to motivation (Herzberg, Mausner et al. 1959).

Theory claimed that an employee considered the presence of motivation factors to exceed the presence of hygiene factors in order to experience workplace motivation. Comparing the motivation factors to the hygiene factors in the questionnaires gave a result that on no educational level, would there be grounds for assuming large differences. However, examining table 2 shows that respondents with a PhD background ranked three out of four hygiene factors lower than the motivation factors, but this gave no significant impact in the analysis.

Company B responded to the same question their answers are presented below.

**Table 4: Question 1 - factors affecting motivation - Company B**

The following factors are the most important for my workplace motivation:				
<b>Company B</b>				
<b>Motivation factors</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
Achievement in my job	4,67	4,78	4,68	5,00
<i>Std.dev</i>	<i>0,58</i>	<i>0,42</i>	<i>0,48</i>	<i>0,00</i>
The work itself	5,00	4,44	4,50	4,50
<i>Std.dev</i>	<i>0,00</i>	<i>0,51</i>	<i>0,51</i>	<i>0,71</i>
My areas of responsibilities	4,67	4,11	4,45	4,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,58</i>	<i>0,51</i>	<i>0,71</i>
Developing own capabilities	4,67	4,67	4,59	5,00
<i>Std.dev</i>	<i>0,58</i>	<i>0,48</i>	<i>0,60</i>	<i>0,71</i>
Creating results	4,33	4,33	4,55	4,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,56</i>	<i>0,50</i>	<i>0,00</i>
The knowledge and capabilities of my colleagues	4,33	4,37	4,36	3,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,79</i>	<i>0,79</i>	<i>0,71</i>
Autonomy	4,33	3,81	4,09	4,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,83</i>	<i>0,75</i>	<i>0,71</i>
<b>Hygiene factors</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
Recognition	4,33	4,15	4,14	4,50
<i>Std.dev</i>	<i>0,577</i>	<i>0,718</i>	<i>0,71</i>	<i>0,707</i>
Promotion possibilities	4,00	3,63	3,64	1,50
<i>Std.dev</i>	<i>1</i>	<i>1,04</i>	<i>1</i>	<i>0,707</i>
Status	3,00	3,11	3,09	2,50
<i>Std.dev</i>	<i>1</i>	<i>0,622</i>	<i>1,09</i>	<i>1,41</i>
Interesting clients	4,00	4,19	4,05	3,00
<i>Std.dev</i>	<i>1</i>	<i>1,12</i>	<i>1,06</i>	<i>2,12</i>
The freedom during my work-day	5,00	4,44	4,55	5,00
<i>Std.dev</i>	<i>0</i>	<i>0,698</i>	<i>0,739</i>	<i>0</i>

After examining the mean values of the responses in this question, there is evidence that education background has little impact on the answers. The mean values are very similar and none are ranked below a (3). In addition, the standard deviations are low which indicates small differences between each respondent. T-tests were conducted in order to closer analyze possible differences between the groups, and Company B showed, as presented here, little differences. No p-values indicated significance, showing that answers given by these respondents vary little based on education background. When looking for trends in table 4, the only factor increasing with education level was Creating Results (4,33-4,55) and Autonomy (4,33-4,09) which contributes to the fact that there are little differences based on education level. There were no indications towards differences between motivation and hygiene factors either.

### 4.3.2 Hygiene and Motivation factors Affecting Job Satisfaction by Education Level

The next question was similar to the first, but in this case, the respondents were asked to answer which factors contributed to their job satisfaction, indirectly determining hygiene factors for both companies. The ranking alternatives were the same as the previous question<sup>20</sup>, and the results are presented under.

**Table 5: Question 2 - factors affecting job satisfaction - Company A**

The following factors are the most important for my job satisfaction					
Company A					
Hygiene factors	Upper	Bachelor	Master	PhD	Other
Salary	4,00	4,00	3,25	3,50	3,00
<i>Std. Dev</i>	<i>0,00</i>	<i>0,00</i>	<i>1,29</i>	<i>0,86</i>	<i>0,00</i>
Job Security	4,33	4,40	4,33	4,00	3,00
<i>Std. Dev</i>	<i>0,52</i>	<i>0,89</i>	<i>0,49</i>	<i>0,76</i>	<i>0,00</i>
Good work conditions	4,00	4,20	4,33	4,41	5,00
<i>Std. Dev</i>	<i>0,00</i>	<i>0,45</i>	<i>0,49</i>	<i>0,67</i>	<i>0,00</i>
Relationship with colleagues	4,33	4,60	4,67	4,55	4,00
<i>Std. Dev</i>	<i>0,52</i>	<i>0,55</i>	<i>0,49</i>	<i>0,60</i>	<i>0,00</i>
Infrastructural accessibility	4,17	3,80	3,92	4,05	5,00
<i>Std. Dev</i>	<i>0,41</i>	<i>0,84</i>	<i>0,79</i>	<i>0,65</i>	<i>0,00</i>
Pension plan	4,50	3,60	3,17	3,36	3,00
<i>Std. Dev</i>	<i>0,55</i>	<i>0,89</i>	<i>1,40</i>	<i>1,14</i>	<i>0,00</i>
Flexible hours	4,50	4,40	3,75	4,18	3,00
<i>Std. Dev</i>	<i>0,55</i>	<i>0,55</i>	<i>0,97</i>	<i>1,22</i>	<i>0,00</i>
Motivation factors	Upper	Bachelor	Master	PhD	Other
Interesting work	4,17	4,20	4,58	4,91	5,00
<i>Std. Dev</i>	<i>0,41</i>	<i>0,45</i>	<i>0,52</i>	<i>0,29</i>	<i>0,00</i>
Developing skills and knowledge	4,17	3,80	4,33	4,41	5,00
<i>Std. Dev</i>	<i>0,41</i>	<i>0,45</i>	<i>0,49</i>	<i>0,50</i>	<i>0,00</i>

Respondents with a PhD and the “Other” respondent ranked the motivation factors higher than their colleagues, though when ranking hygiene factors, there were more even mean values. Salary was highest ranked by Bachelor and Upper secondary respondents. Pension plan was ranked lowest from respondents with higher education and relationship with colleagues was ranked highest with the same group. There was only one significant p-value when testing the above groups. This indicated that there were differences between respondents with a Bachelor background and those with a PhD background, when ranking motivation factors (0,048). This

<sup>20</sup> Very Important (5) to Completely Unimportant (1)

indicated that these two groups rank motivation factors differently when the question focuses on job satisfaction rather than motivation. Another proof of this is the lack of trends in the hygiene factors, as only one factors contributed to an increasing trend; Good work conditions (4,00-4,41). Both motivation factors had an increasing trend: Interesting work and Developing skills and knowledge (4,17-4,91 and 3,80-4,41) indicating differences between education level in these categories.

Table 6 presents the mean values of the answers given to the same question as discussed above, for company B.

**Table 6: Question 2 - factors affecting job satisfaction - Company B**

The following factors are the most important for my job satisfaction				
Company B				
	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
<b>Hygiene factors</b>				
Salary	4,33	4,11	4,32	4,50
<i>Std. Dev</i>	<i>0,577</i>	<i>0,751</i>	<i>0,646</i>	<i>0,707</i>
Job Security	5,00	4,30	4,14	2,00
<i>Std. Dev</i>	<i>0</i>	<i>0,912</i>	<i>1,04</i>	<i>0</i>
Recognition	3,67	4,07	4,14	4,00
<i>Std. Dev</i>	<i>1,53</i>	<i>0,874</i>	<i>0,64</i>	<i>0</i>
Relationship with colleagues	4,67	4,56	4,45	4,00
<i>Std. Dev</i>	<i>0,577</i>	<i>0,506</i>	<i>0,671</i>	<i>0</i>
Physical office environment	4,00	3,96	3,95	4,00
<i>Std. Dev</i>	<i>0</i>	<i>0,808</i>	<i>0,785</i>	<i>1,41</i>
Flexible hours	3,67	4,26	4,64	5,00
<i>Std. Dev</i>	<i>2,31</i>	<i>1,06</i>	<i>0,658</i>	<i>0</i>
<b>Motivation factors</b>				
Interesting work	4,67	4,70	4,68	5,00
<i>Std. Dev</i>	<i>0,577</i>	<i>0,465</i>	<i>0,716</i>	<i>0</i>
Positive feedback from supervisor	4,33	4,15	3,82	4,00
<i>Std. Dev</i>	<i>1,15</i>	<i>0,77</i>	<i>0,907</i>	<i>0</i>

The respondents in company B did not differ greatly in their answers when asked about job satisfaction. Hygiene factors were ranked a little lower than motivation, but the standard deviations indicate small differences between respondent groups, and the t-tests conducted gave no significant outcome between groups analyzed. However, there were some small trends which were able to be observed when analyzing table 6 closer. Job security and Relationship with colleagues had slight receding trends (5,00-4,14 and 4,67-4,45), while Recognition and Flexible

hours had a small increasing trend (3,67-4,14 and 3,67-4,64) between education groups. Under motivation factors, Positive feedback from supervisor was also observed with a marginal receding trend (4,33 – 3,82) between education groups. This may underline the fact that there are insignificant differences which did not pan out during the t-tests. I tried several different approaches in order to uncover differences between groups; mean values based on gender and age as well. However, the mean values did not differ from the above-mentioned values. This was the reason for continuing to stick with analyzing based on education level, as well as this grouping being a part of the research question determining what motivates knowledge workers. This was also the case in the study performed by Furnham et al. (2009) where a similar study was conducted; demographics and personalities were here proven to be significant; job tenure, age, and gender were just as insignificant as they were in these results. Wiley (1997), on the other hand, argues that status, gender, income, and occupation are relevant to employees responses, but agrees that main differences lie in demographics and personalities.

### 4.3.3 De-motivating factors if not present by Education Level

Question 3 asked the respondents to rank factors which would contribute to de-motivation if not present. In other words, I wanted to indirectly ask the employees if, in fact, motivation factors contributed to de-motivation if not present, though this goes against the theory by Herzberg. Hygiene factors were also included in order to get a sense of the effect on de-motivation if not present.

**Table 7: Question 3 - De-motivating factors - Company A**

The following factors de-motivate me if not present:					
Company A					
	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>PhD</i>	<i>Other</i>
<b>Hygiene factors</b>					
Today's Salary	3,33	2,60	3,58	3,68	3,00
<i>Std.dev</i>	1,03	1,34	1,00	0,72	0,00
Flexible Hours	3,33	2,40	3,67	4,00	3,00
<i>Std.dev</i>	1,51	1,67	1,07	1,20	0,00
Recognition	3,33	2,80	3,83	3,91	4,00
<i>Std.dev</i>	1,21	1,10	0,94	0,81	0,00
Status	3,17	2,80	3,08	3,00	3,00
<i>Std.dev</i>	0,98	0,84	0,52	1,02	0,00
Job Security	3,33	2,00	3,92	3,55	3,00
<i>Std.dev</i>	1,51	1,41	0,79	0,91	0,00
Work conditions	3,50	2,60	4,00	3,64	5,00
<i>Std.dev</i>	1,22	1,34	0,60	0,79	0,00
Work environment (physical)	3,17	2,60	3,75	3,64	3,00
<i>Std.dev</i>	0,98	1,34	0,45	0,85	0,00
<b>Motivation factors</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>PhD</i>	<i>Other</i>
Making a difference	3,67	2,60	4,17	3,86	4,00
<i>Std.dev</i>	0,82	0,89	0,39	0,99	0,00
Developing academic skills	3,17	2,80	4,08	3,64	3,00
<i>Std.dev</i>	0,75	1,10	0,52	0,95	0,00

Unlike previous questions, there are clearly differences in the mean values of the answers given by the education level groups when asked if the given hygiene and motivation factors contributed to de-motivation if not present. As the theory indicates, absence of hygiene factors plays a higher role in the de-motivation and dissatisfaction of the respondents. However, based on the mean values presented in table 7, there were indications of significant differences between groups which are presented in table 8. Emphasizing this, there are increasing trends observed in table 7 from Bachelor to PhD educations: Today's Salary (2,60-3,68), Flexible hours (2,40-4,00), and Recognition (2,80-3,91), explaining the p-values in table 8. According to the tests performed,

there are several significant p-values between higher and lower education, except between the two lowest levels; Bachelor vs. Upper secondary, which according to the p-value (0,0007) is also of significance. Furthermore, respondents with Upper secondary education varied from the other groups in their answers, which is indicated in the lack of contribution to increasing trends mentioned above. Bachelor-educated respondents answered differently from both Masters and PhD educated when asked about hygiene factors.

*Table 8: P-values Question 3 - Company A*

	P-Values	
	Hygiene	Motivation
Bachelor vs. Master	<b>0,0008</b>	0,0631
Bachelor vs. PhD	<b>0,0008</b>	0,1278
Bachelor vs. Other	0,0211	0,4097
Bachelor vs. Upper	<b>0,0007</b>	0,2892
Master vs. PhD	0,5529	0,1207
Master vs. Other	0,3449	0,4028
Master vs. Upper	<b>0,0057</b>	0,1821
PhD vs. Other	0,5257	0,6344
PhD vs. Upper	<b>0,0252</b>	0,2472
Other vs. Upper	0,6708	0,7952



There were differences in the mean values in company B as well, but the mean values were generally lower.

**Table 9: Question 3 - De-motivating factors - Company B**

The following factors de-motivate me if not present:				
<b>Company B</b>				
	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
<b>Hygiene factors</b>				
Today's Salary	4,00	4,19	4,41	4,00
<i>Std.dev</i>	0	0,681	0,796	0
Flexible Hours	3,00	3,96	3,91	3,50
<i>Std.dev</i>	1,73	0,98	1,27	2,12
Recognition	3,67	3,63	3,86	3,50
<i>Std.dev</i>	1,53	1,04	0,941	0,707
Status	3,33	3,11	3,18	2,50
<i>Std.dev</i>	1,15	0,934	0,958	2,12
Job Security	3,00	3,56	4,00	2,00
<i>Std.dev</i>	1,73	1,15	1,07	0
The work environment	2,67	3,52	3,95	2,00
<i>Std.dev</i>	1,73	1,15	1,07	0
<b>Motivation factors</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
Creating Results	2,33	3,63	4,27	2,50
<i>Std.dev</i>	0,577	1,33	0,827	0,707
Developing own capabilities	2,67	3,89	4,23	3,00
<i>Std.dev</i>	1,15	1,25	0,813	1,41

The respondents ranked the hygiene factors of lower importance in this question than the previous two. There was a clear overweight of hygiene factors in the question which may indicate the importance of the given factors in terms of their perceived de-motivation. This is expected since theory and previous research has concluded several times with the fact that hygiene factors are perceived as contributing factors to dissatisfaction if not present. Motivation factors are defined as the factors contributing to motivation if present, but not de-motivating if absent. On the background of this, the role of hygiene factors was inquired, its perceived contribution to de-motivation, and if this was indeed the case.

Of the hygiene factors, Today's salary level was ranked highest as a de-motivating factor if not present and Status was ranked lowest. Developing own capabilities was the motivation factor which was perceived as the most de-motivating if not present. Examination of table 9 closer shows some indications to trends here as well. Under hygiene factors, there is an increasing trend with Today's Salary (4,00-4,41), Job Security (3,00-4,00), and The Work environment (2,67-4,23).

However, the largest increases were found under motivation factors where both responses (Creating results and Developing own capabilities) increased from respectively 2,33 – 4,27 and 2,67 – 4,23. This was not adequately significant according the t-tests conducted, but the p-value presented in table 10 is very close to the rejection value of 0,05.

In this question, I was especially interested in mapping whether differences between the given groups differed based on education level. According to table 10, there were significant p-values between several of the examined groups. This indicates that answers given indeed vary when comparing education levels as expected when analyzing the above named trends.

*Table 10: P-values Question 3 - Company B*

	P-Values	
	Hygiene	Motivation
Bachelor vs. Master	<b>0,0377</b>	0,1916
Bachelor vs. Other	<b>0,0359</b>	0,0756
Bachelor vs. Upper	0,1101	0,0187
Master vs. Other	<b>0,0297</b>	0,1145
Master vs. Upper	<b>0,0413</b>	0,0686
Other vs. Upper	0,1825	0,2048

#### 4.3.4 Factors inspiring to increased Performance by Education Level

Question 4 listed a number of factors for both companies asking the respondent to answer what inspired to increased performance. They were asked to rank between Very Inspiring (4) and Do not inspire at all (1). Mean responses are presented below.

**Table 11: Question 4 - Inspiring factors - Company A**

The following factors inspire med to perform better:					
Company A					
<b>Motivation</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>PhD</i>	<i>Other</i>
Developing my academic skills	3,00	3,00	3,58	3,36	4,00
<i>Std.dev</i>	<i>0,63</i>	<i>1,22</i>	<i>0,52</i>	<i>0,49</i>	<i>0,00</i>
Specific goal achievements	2,83	3,20	3,42	3,59	4,00
<i>Std.dev</i>	<i>0,75</i>	<i>0,45</i>	<i>0,52</i>	<i>0,50</i>	<i>0,00</i>
High expectations	3,00	3,40	3,42	2,95	4,00
<i>Std.dev</i>	<i>0,63</i>	<i>0,55</i>	<i>0,67</i>	<i>0,79</i>	<i>0,00</i>
Positive feedback from supervisor	3,33	3,80	3,67	3,41	4,00
<i>Std.dev</i>	<i>0,52</i>	<i>0,45</i>	<i>0,65</i>	<i>0,73</i>	<i>0,00</i>
Teamwork	3,00	3,00	3,50	3,32	3,00
<i>Std.dev</i>	<i>0,89</i>	<i>1,22</i>	<i>0,67</i>	<i>0,65</i>	<i>0,00</i>
Making a difference in the world of R&D	2,50	3,00	3,75	3,59	4,00
<i>Std.dev</i>	<i>0,84</i>	<i>0,00</i>	<i>0,62</i>	<i>0,59</i>	<i>0,00</i>
<b>Hygiene</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>PhD</i>	<i>Other</i>
My work environment	3,67	3,00	3,42	2,95	3,00
<i>Std.dev</i>	<i>0,52</i>	<i>0,71</i>	<i>0,52</i>	<i>0,65</i>	<i>0,00</i>
Salary and Benefits	3,50	3,20	2,92	2,77	3,00
<i>Std.dev</i>	<i>0,55</i>	<i>0,45</i>	<i>0,29</i>	<i>0,69</i>	<i>0,00</i>
Company A's reputation	3,33	3,20	2,75	2,95	3,00
<i>Std.dev</i>	<i>0,52</i>	<i>0,45</i>	<i>0,62</i>	<i>0,58</i>	<i>0,00</i>

Unlike the previous questions, the alternatives for this question were only ranked between 1-4, which explains the reason for most of the mean values in table 11 scoring around 3, which was defined as “Somewhat Inspiring”. Positive feedback from supervisor is ranked highest with the employees with lower education, while Making a difference in the world of R&D is ranked as most inspiring with the higher educated respondents. Work environment is a very inspiring factor for the employees with upper secondary education (3,67), while Salary and benefits is only ranked as “Somewhat inspiring” for the respondents with a PhD education (2,77). There were fewer trends in this answer, as only Specific goal achievements contained a clear increasing trend (2,83-3,59) under motivation factors and Salary and benefits had a clear receding trend (3,50-2,77)

under hygiene factors. Company A’s reputation has a somewhat receding trend (3,33-2,75), but increases a little when reaching PhD (2,95).

After testing significance between respondent groups, those with Upper secondary education stood out from their colleagues. Under motivation factors, they responded differently than both Bachelor (0,027) and Master education (0,006), and the p-value in table 12 comparing Upper secondary with the PhD respondents, show a very close value to the pre-determined alpha value of 0,05. Under hygiene factors, Upper secondary indeed varied from PhD respondents (0,033), and “Other” (0,035)<sup>21</sup>.

Testing whether respondents with the named educations ranked motivation differently from hygiene factors was clear in this matter, shown in table 13; PhD, “Other”, and Upper secondary education all ranked the factors differently. This was the first question where Herzberg’s initial theory on differences between motivation and hygiene was detected.

*Table 12: P-values Question 4 - Company A*

	P-Values	
	Motivation	Hygiene
Bachelor vs. Master	0,071	0,729
Bachelor vs. PhD	0,478	0,162
Bachelor vs. Other	<b>0,017</b>	0,184
Bachelor vs. Upper	<b>0,027</b>	0,145
Master vs. PhD	0,080	0,559
Master vs. Other	0,153	0,902
Master vs. Upper	<b>0,006</b>	0,051
PhD vs. Other	0,053	0,222
PhD vs. Upper	0,058	<b>0,033</b>
Other vs. Upper	0,008	<b>0,035</b>

*Table 13: P-values between motivation and hygiene factors question 4, company A*

P-values Motivation vs. Hygiene	
Bachelor	0,518
Master	0,126
PhD	<b>0,004</b>
Other	<b>0,004</b>
Upper	<b>0,009</b>

<sup>21</sup> Reminder: only one respondent in this category with company A

The mean values of the answers in question 4 for company B show the following results:

**Table 14: Question 4 - Inspiring factors - Company B**

The following factors inspire med to perform better:				
<b>Company B</b>				
<b>Motivation</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
Developing my academic skills	3,33	3,81	3,73	3,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,40</i>	<i>0,46</i>	<i>0,71</i>
Specific goal achievements	3,00	3,37	3,41	2,50
<i>Std.dev</i>	<i>1,00</i>	<i>0,74</i>	<i>0,67</i>	<i>0,71</i>
High expectations	3,00	2,85	2,77	2,50
<i>Std.dev</i>	<i>0,00</i>	<i>0,60</i>	<i>0,81</i>	<i>2,12</i>
Positive feedback from supervisor	3,67	3,70	3,36	3,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,47</i>	<i>0,58</i>	<i>0,71</i>
Teamwork	3,33	3,48	3,36	2,50
<i>Std.dev</i>	<i>1,15</i>	<i>0,75</i>	<i>0,66</i>	<i>0,71</i>
Creating results for interesting clients	3,00	3,67	3,77	4,00
<i>Std.dev</i>	<i>1,00</i>	<i>0,56</i>	<i>0,53</i>	<i>0,00</i>
<b>Hygiene</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
My work environment	3,33	3,22	3,09	3,00
<i>Std.dev</i>	<i>0,58</i>	<i>0,64</i>	<i>0,53</i>	<i>0,00</i>
Salary and Benefits	3,67	3,44	3,36	3,00
<i>Std.dev</i>	<i>0,58</i>	<i>0,64</i>	<i>0,58</i>	<i>0,00</i>
Company B's reputation	3,33	3,19	3,27	3,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,62</i>	<i>0,70</i>	<i>0,71</i>

Similar to company A, the responses were mainly concentrated around (3), Somewhat inspiring, when ranking the given motivation and hygiene factors. Respondents with Bachelors and Masters answered similar in both categories, and they did not differ too much from the other two education backgrounds. Developing academic skills and Creating results for interesting clients ranked highest with the first three groups of respondents, while Positive feedback from supervisor ranked highest for respondents with Upper secondary education. Salary and benefits was the most inspiring hygiene factor, except with respondents in the “Other” category who ranked Company B’s reputation as most inspiring.

The trends standing out under this question are the increases of Specific goal achievements (3,00-3,41) and Creating results for interesting clients (3,00-3,77). Receding trends were found under High expectations (3,00-2,77), My work environment (3,22-3,00), and Salary and Benefits (3,44-3,00).

#### 4.3.5 Factors Contributing to Satisfaction by Education Level

The last question where it was possible to perform correct analyses asked the respondents to answer what gave them job satisfaction. Several motivation and hygiene factors were listed and the mean values are presented below:

**Table 15: Question 5 - Factors contributing to job satisfaction - company A**

The following statements apply to me:					
Company A					
I receive great satisfaction in:					
<u>Motivation factors:</u>	Upper	Bachelor	Master	PhD	Other
working for a better world	4,17	4,00	4,08	4,14	5,00
<i>Std.dev</i>	0,41	0,00	0,67	0,94	0,00
developing own knowledge and skills	4,00	4,00	4,33	4,36	5,00
<i>Std.dev</i>	0,63	0,71	0,49	0,79	0,00
receiving recognition for my work	4,00	4,40	4,08	4,09	5,00
<i>Std.dev</i>	0,63	0,55	0,52	0,61	0,00
developing technology used in the industry	3,67	4,20	4,42	3,95	5,00
<i>Std.dev</i>	0,82	0,45	0,67	0,95	0,00
having responsibility in my job	4,00	4,20	3,67	3,82	4,00
<i>Std.dev</i>	0,63	0,45	0,89	0,96	0,00
managing own work day	3,83	4,20	3,58	3,27	5,00
<i>Std.dev</i>	0,75	0,84	0,79	1,16	0,00
<u>Hygiene factors:</u>	Upper	Bachelor	Master	PhD	Other
today's tangible perks	4,33	4,20	3,92	3,59	3,00
<i>Std.dev</i>	0,52	0,45	0,52	1,30	0,00
infrastructural facilities	4,33	4,20	3,83	3,50	5,00
<i>Std.dev</i>	0,52	0,45	0,84	0,86	0,00
promotion possibilities	3,67	3,20	3,33	3,18	3,00
<i>Std.dev</i>	0,82	0,84	0,78	0,96	0,00
social interactions with coworkers	4,50	4,20	4,33	3,95	4,00
<i>Std.dev</i>	0,55	0,45	0,89	1,09	0,00

The scale was between 1-5<sup>22</sup>, and the factors were ranked relatively high, especially motivation factors. Managing own work day received lowest score from Master's and PhD respondents. Developing technology used in the industry only received a 3,67 from respondents with Upper secondary education, but overall, the factors were ranked around a (4) value (Agree). Under hygiene factors, Promotion possibilities received the lowest score from all groups while Social

<sup>22</sup> Strongly Disagree (1) to Strongly Agree (5)

interactions with coworkers received the highest score from all groups except for “Other”, who ranked Infrastructural facilities as the most important satisfaction factor<sup>23</sup>.

Increasing trends were found within Developing own knowledge and skills (4,00-4,36), while the receding trends mainly occurred under hygiene factors. In this case, Today’s tangible perks (4,33-3,59), Infrastructural facilities (4,33-3,50), and Social interactions with coworkers (4,50-3,95), receded as the education level increased; their significance presented in table 16 with the p-values uncovered.

When performing t-tests on these groups, there were some significant finds mainly comparing the “Other” group to its colleagues when analyzing motivation factors<sup>24</sup>. Analyzing hygiene factors, the most significant differences were mainly found when comparing the Upper secondary respondents to its colleagues. However, when comparing between motivation and hygiene factors to each other, there were under no groups, any significant differences in the respondents answers.

*Table 16: P-values question 5, company A*

	P-Values	
	Motivation	Hygiene
Bachelor vs. Master	0,438	0,524
Bachelor vs. PhD	0,269	0,090
Bachelor vs. Other	<b>0,015</b>	0,658
Bachelor vs. Upper	0,095	<b>0,048</b>
Master vs. PhD	0,410	<b>0,010</b>
Master vs. Other	<b>0,003</b>	0,830
Master vs. Upper	0,636	<b>0,016</b>
PhD vs. Other	<b>0,008</b>	0,700
PhD vs. Upper	0,972	<b>0,004</b>
Other vs. Upper	<b>0,006</b>	0,351

<sup>23</sup> Reminder: only one respondent in the “other” category indicating that this person is assumed to work with tasks where the infrastructure is a large part of the job

<sup>24</sup> Will not be further discussed as this category is represented by one respondent

The same question generated answers presented in table 17, for company B.

*Table 17: Question 5 - Factors contributing to job satisfaction - company B*

The following statements apply to me:				
<b>Company B</b>				
<b>I receive great satisfaction:</b>				
<b>Motivation</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
receiving recognition for my work	3,67	4,26	4,14	4,00
<i>Std.dev</i>	<i>1,53</i>	<i>0,71</i>	<i>0,71</i>	<i>0,00</i>
developing own knowledge and skills	4,33	4,59	4,45	4,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,50</i>	<i>0,60</i>	<i>0,71</i>
creating results for the company and clients	4,67	4,41	4,45	4,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,57</i>	<i>0,74</i>	<i>0,71</i>
having responsibility in my job	4,33	4,15	4,36	3,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,82</i>	<i>0,73</i>	<i>2,12</i>
promotion possibilities	3,00	3,48	3,77	2,00
<i>Std.dev</i>	<i>1,00</i>	<i>1,01</i>	<i>0,87</i>	<i>1,41</i>
having autonomy	4,33	3,89	4,41	4,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,85</i>	<i>0,73</i>	<i>0,71</i>
<b>Hygiene</b>	<i>Upper</i>	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>
having new office space and "free seating"	4,00	3,67	3,73	3,50
<i>Std.dev</i>	<i>1,00</i>	<i>0,88</i>	<i>1,08</i>	<i>0,71</i>
having job security	4,67	4,37	3,91	2,50
<i>Std.dev</i>	<i>0,58</i>	<i>0,74</i>	<i>0,87</i>	<i>0,71</i>
having competitive salary	4,33	4,15	4,14	4,00
<i>Std.dev</i>	<i>0,58</i>	<i>0,77</i>	<i>1,08</i>	<i>0,00</i>
having status in my job	3,00	3,19	3,50	2,50
<i>Std.dev</i>	<i>1,00</i>	<i>0,79</i>	<i>0,67</i>	<i>2,12</i>
having a social work environment	4,33	4,78	4,50	4,00
<i>Std.dev</i>	<i>0,58</i>	<i>0,42</i>	<i>0,60</i>	<i>0,00</i>
working with interesting clients	4,33	4,22	4,41	4,00
<i>Std.dev</i>	<i>0,58</i>	<i>0,70</i>	<i>0,59</i>	<i>1,41</i>

Except for the in the “Other” group, all factors were ranked high in company B as well.

However, company B ranked the factors generally higher than company A, even the hygiene factors. Developing own knowledge and skills was the leading factor in all groups when asked about this motivation factor. All groups ranked Promotion possibilities lowest. Under hygiene factors, Having a social work environment scored highest among all groups except for those respondents with Upper secondary education, which ranked Job security as the factor contributing to the most job satisfaction. The differences between the groups were generally low and after performing the t-tests, this was confirmed. There were no significant differences in



respondents from the different education groups in this question. There were no significant differences uncovered when comparing motivation and hygiene factors as well.

Though there were no significant differences uncovered in the t-tests, there were some trends which were possible to trace after examining table 17 closely. Promotion possibilities (3,00-3,77) and Having status in the job (3,00-3,50) had increasing trends. Having job security (4,67-3,91) as well as Having competitive salary (4,33 – 4,14) had marginal, but receding trends as education level increases.

### 4.3.6 Arranging factors based on Employment Relevance

The last question of the survey, asked all respondents to arrange ten given factors from 1 – 10, where 1 represented the most important factor for employment with their company, and 10, the least important factor. This was a clearly misunderstood question and only 12 from company A and 14 from company B, answered this question correctly which is not enough in order to present a satisfactory result representing all respondents. The mistakes made were either not understanding that they had to choose each number only once, even though this was specified in the instructions field, and/or arranging the values opposite of the value determined in the question<sup>25</sup>.

**Table 18: Company A's ranking of factors contributing to employment**

Arranging factors from 1-10					
Company A					
	<i>Bachelor</i>	<i>Master</i>	<i>PhD</i>	<i>Other</i>	<i>Upper</i>
Salary and wage benefits	3,20	5,58	6,00	8,00	2,83
<i>Std.dev</i>	<i>1,10</i>	<i>1,98</i>	<i>2,47</i>	<i>0,00</i>	<i>2,64</i>
Job Security	2,20	4,42	5,32	10,00	3,00
<i>Std.dev</i>	<i>1,30</i>	<i>2,35</i>	<i>3,15</i>	<i>0,00</i>	<i>3,52</i>
Research and Development	3,20	4,17	3,64	1,00	4,83
<i>Std.dev</i>	<i>2,17</i>	<i>3,33</i>	<i>3,39</i>	<i>0,00</i>	<i>3,25</i>
Academic development	3,20	4,67	4,55	4,00	4,33
<i>Std.dev</i>	<i>1,64</i>	<i>3,03</i>	<i>3,14</i>	<i>0,00</i>	<i>2,66</i>
Making a difference	4,60	4,58	6,09	2,00	4,50
<i>Std.dev</i>	<i>2,61</i>	<i>3,48</i>	<i>3,13</i>	<i>0,00</i>	<i>2,95</i>
Good work conditions (the office space, lunch)	5,40	4,67	5,68	6,00	3,83
<i>Std.dev</i>	<i>3,36</i>	<i>2,50</i>	<i>2,34</i>	<i>0,00</i>	<i>3,06</i>
Infrastructural facilities needed for my research	4,20	4,75	4,77	7,00	5,00
<i>Std.dev</i>	<i>3,35</i>	<i>2,93</i>	<i>2,33</i>	<i>0,00</i>	<i>3,41</i>
My colleagues	4,40	5,08	4,41	5,00	3,00
<i>Std.dev</i>	<i>3,05</i>	<i>3,29</i>	<i>3,25</i>	<i>0,00</i>	<i>3,46</i>
Interesting work	3,40	4,58	4,23	3,00	3,50
<i>Std.dev</i>	<i>2,30</i>	<i>3,60</i>	<i>3,34</i>	<i>0,00</i>	<i>2,59</i>
Acknowledgement and promotion opportunities	4,20	4,75	5,00	9,00	4,00
<i>Std.dev</i>	<i>3,35</i>	<i>2,26</i>	<i>2,54</i>	<i>0,00</i>	<i>2,83</i>

The first thing that is possible to see from this table, is that the one respondent with “Other” as education background, has completed the question as requested; each factor is presented once, and the scale is understood the way it was intended as the responses correlate to previous

<sup>25</sup> This was uncovered when some groups who had earlier ranked a factor as important, now ranked it as unimportant and vice versa.

rankings. This respondent ranked Research and development and Making a difference as the two largest contributors to this employees reason for staying employed at company A. The respondent also ranked Job security and Acknowledgement as the two least important factors, which is similar to previous responses. Had all respondents understood this question correctly, there would be a larger ground for discussing all factors and there would be possibilities for mapping which factors were most important to the respondents in terms of employment with company A.

The respondents with a Bachelor background, ranked most factors lower than, for instance, the respondents with a PhD background. Most respondents chose the same ranking number more than once and as the standard deviations are relatively large, there is great variance in the responses. Except for the respondent with “Other” education background, all groups ranked the factors relatively low (between 1-6).

**Table 19: Company B's ranking of factors contributing to employment**

Arranging factors from 1-10				
Company B				
	<i>Bachelor</i>	<i>Master</i>	<i>Other</i>	<i>Upper</i>
Salary and tangible perks	6,59	6,86	8,00	8,67
<i>Std.dev</i>	2,55	2,77	2,83	0,58
Job security	7,04	5,55	4,00	9,67
<i>Std.dev</i>	2,62	2,94	1,41	0,58
Creating results for interesting clients	7,93	7,77	8,00	5,67
<i>Std.dev</i>	1,96	2,16	1,41	4,04
Developing own knowledge and capabilities	8,52	8,05	9,00	7,33
<i>Std.dev</i>	1,93	2,17	1,41	2,52
The physical work environment (office-space, lunch)	6,37	5,86	4,00	8,33
<i>Std.dev</i>	2,73	2,49	1,41	0,58
My colleagues	8,52	7,64	8,50	7,67
<i>Std.dev</i>	1,42	1,84	2,12	2,08
Interesting work tasks	8,85	8,23	8,00	7,33
<i>Std.dev</i>	1,26	2,18	2,83	2,89
Recognition in the media industry	5,74	6,05	5,50	3,33
<i>Std.dev</i>	2,78	2,77	6,36	4,04
Feedback from my supervisor	6,89	6,45	5,00	7,33
<i>Std.dev</i>	2,34	2,60	4,24	0,58
Promotion possibilities/interesting work titles	5,22	5,91	3,50	4,67
<i>Std.dev</i>	3,14	2,67	0,71	1,53

Company B, on the other hand, ranked most factors relatively high (between 5-10), with some exceptions for the respondents with “Other” and Upper secondary education background. As the

higher values represent “non-important” reasons for employment, there can be drawn assumptions that the respondents misinterpreted the significance of the number scale as previous questions indicate that many of the given factors were, indeed, important to the respondents. For instance, respondents with a Bachelor and Master education background ranked Interesting work tasks and Developing own knowledge and capabilities as relatively non-important factors for employment, which is clearly a wrong indication after having researched previous answers by the same respondents. There are not any factors which clearly stand out with a low score neither, which also indicated response failure.

The standard deviations were slightly smaller than those of company A, which can indicate somewhat of a collectively misunderstanding between the respondents.

I created a simulation in excel in order to see what mean values and standard deviations would have been if respondents had indeed followed the instructions correctly. What was uncovered was a larger span in mean values and the possibility to see a clear indication towards which factor was the most contributing factor towards employment, and which was least important.



## 5. Discussion

Motivation of knowledge workers and ensuring their job satisfaction may be a complicated job for managers. However, their role in this matter may be less visible in today's knowledge-based environments. As theory has previously stated, as well as results from this research, there is evidence that knowledge workers hold an internal drive in performing their job. Unlike the times where Herzberg's theory was established, today's knowledge workers choose jobs according to education, interests, and abilities.

### 5.1 Assumption: Knowledge workers do not differentiate between motivation and hygiene factors

Primarily, the essential matter of the research is to confirm if, in fact, the informants and respondents qualify under the terminology "knowledge workers". According to the many definitions which can be applied in the matter, "they think for a living" stuck out and was perceived as most precise in this specific thesis (Davenport 2005). Concluding that this is the case for the 102 individuals participating in the study is relatively safe. Knowledge workers are a large and growing category of workers, they are the most expensive workforce that the company employs, and they are essential to the growth of many economies. The importance for managing them was confirmed by the two informants and the fact that they could under no circumstances follow a template as all knowledge workers are different and in need of different treatment. Interview object A emphasized this when uttering the fact that his employees varied from being completely autonomous not in need of manager interaction for weeks at a time, while some workers needed to be "carried" through each workday. Though both are extreme cases, he implied having the whole range as his sub-ordinates. Interview Object B indicated the exchange of information and knowledge between the workers contributes to the fact that the differences between education groups are diminished and that his involvement role is also reserved for special cases.

This confirms the previous studies on the knowledge manager being a transformational leader or a HRPLTA<sup>26</sup> leader. Both informants can arguably fit in under both descriptions. As stated by previous research, (Bass 2000, Nguyen and Mohamed 2009), knowledge management has a positive relation to transformational leadership, and Interview Object B emphasizes this by

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<sup>26</sup> Hire the Right People and Leave Them Alone

implying his focus on gaining trust and understanding his employees. Interview object A, though also a transformational leader, has more clearly chosen the HRPLTA approach, as his focus is on facilitating and recruiting (Davenport 2005).

When it comes to the assumption of knowledge workers in the two companies, not differentiating between motivation and hygiene factors would in this case be relevant. The range of individuals in the respondent pool varied in age, education, and origin, which underlines the difficulty for managing them somewhat similarly. There were certainly respondents who were genuinely interested in their field, developing their knowledge, and working for a higher cause. However, there were respondents who were motivated by the latter factors, they also saw the importance in elements contributing to their everyday satisfaction; an acceptable salary, good colleagues, and nice office spaces.

The research question wants to establish which factors are relevant for knowledge-workers, and the predetermined factors presented by Herzberg were used as a foundation for the research. After studying previous research in depth, one main assumption grew; knowledge-workers, and generally today's population have more possibilities than before, so their expectations are higher – in this case, *hygiene factors may not differ from motivation factors anymore*. Whether some of Herzberg's hygiene factors, today may be perceived as motivation factors, is also an interesting discussion. Taking the example of infrastructure and research equipment needed by researchers in company A; these are, by definition, hygiene factors, but prevent the researchers from physically doing their job if not present. This contributes to the motivation, hygiene, and work execution and its importance may even surpass the basic motivation factors. Furthermore, company B has a portfolio of interesting and well-known clients; a hygiene factor as this is an external factor contributing to motivation and satisfaction. Its absence would indeed contribute to lower motivation and satisfaction; however, the company would not be in its current position as market leader and be an interesting workplace if they lacked these specific clients. This would contribute to the absence of additional motivation and hygiene factors present today, affecting the attraction of knowledge workers.

Based on these examples, and the results presented in the previous chapter, the motivation and satisfaction scenario is more complex than presented fifty –some years ago. Motivation and hygiene factors depend on each other, and there is sufficient evidence supporting the hypothesis that their importance is somewhat similar. This was also the case in studies performed by Furnham et al. (2009) indicating that demographics and personality were significantly related to both job satisfaction and motivation.

Both companies offer salaries which are considered acceptable; the employees do not have to compromise their current situations in order to work there; they can afford living and family expenses. Assumptions around non-satisfactory salary surrounds the fact when it is objectively too low (Kuvaas 2008). In company B, Today's salary received highest mean score when asked which factor contributed to de-motivation if not present (question 3) which can be linked to Kuvaas' research on its effect when not meeting today's standards.

Other evidence supporting the assumption of equal relevance between motivation and hygiene factors were presented in the previous chapter. In the first two questions of the survey, the p-values were not significant and there could not be a rejection of the null hypothesis that there were similarities between responses. This in turn means that the importance of motivation and hygiene is approximately similar in these cases.

The main perception of the research and according to the statistical tests, there were not enough null hypothesis' being able to reject in the matter of motivation versus hygiene. This emphasizes the assumption that knowledge-workers do not deliberately differentiate between the two. This does not conclude them valuing extrinsic factors like salary, office space, and colleagues on the same level as intrinsic factors, like professional development and the work itself, but more so that they consider all factors playing essential roles in the whole job satisfaction and motivation picture.

## **5.2 Assumption: Respondent's answers differ based on education in company A**

Another definition of a knowledge worker is according to Davenport, higher education. As stated in the introduction, this includes a much larger group of workers, and not all of these higher educated individuals qualify as knowledge workers. One can be knowledge worker without higher education, but this does not necessarily mean that everybody with higher education is a knowledge worker (Davenport, Thomas et al. 2002, Davenport 2005)

The respondents in the survey, as well as the two informants, are clearly defined as knowledge workers, however, there were respondents with lower education; be it Upper secondary school and "Other". The respondents have different education backgrounds and the assumption regarding the differentiation between the unlike levels gave answers indicating personal preferences.



In company A, the respondents varied vastly in education level, as well as job descriptions. They are researchers with PhD degrees, administrative employees with lower education, and engineers mainly working with technology and development. This was the reason for assuming differences in responses based on education level, as well as underlining the information given by the manager in company A regarding the difference in leading employees with different backgrounds.

In many of the questions, there were clear increasing trends in the mean values between education groups. Especially within motivation factors, the value received higher value as the level of education increased. These results contribute to confirming the previous research performed by Eskildsen et al. (2004), indicating the relevance of education level having an impact on motivation.

With this in mind, the individual's personality plays such an important role in what the respondent ultimately answers, and combining this with different levels of education, supports and underlines the named assumption.

*“Personalities are not easy to change; one cannot turn an academic in to an innovator.”*

-Interview Object A

Supporting this, the previous mentioned research which is confirming how demographics and personalities affect motivation and how there are vast difference based on this (Furnham, Eracleous et al. 2009). People are motivated by a great variety of needs, which, as previously mentioned, vary in order of importance, in different situations, and over time (Lundberg, Gudmundsom et al. 2009). In addition, there has been research on employees' personalities and work motivation, where results have indicated extrovert personalities being motivated by motivation factors, while employees with an introvert personality rated hygiene factors as more important (Furnham, Forde et al. 1999). All of which was uncovered in this research as well.

The way information was retrieved, is argued to have an effect on how they answer. The Furnham, Forde et al. research, implies that answers also varied when applying questionnaires, focus groups, interviews, or behavioral observations, in other words, respondents respond to the way they are approached with questions regarding motivation and work satisfaction.

If the respondents in this research had answered differently involved in a focus group or behavioral observation, will hardly be answered with other than assumptions; but that their answers may vary under different circumstances and at another time, may very well be argued

without this having an impact on the reliability of the research. Furthermore, as they undergo personal developments throughout their careers, their personalities will also change, and this may shape their answers at other times.

### **5.3 Discussions around responses given in the questionnaire**

#### ***5.3.1 Motivation and Hygiene factors affecting Motivation by Education Level***

The first ranking question<sup>27</sup> in the survey asked the respondents to answer which motivation and hygiene factors were most relevant to their workplace motivation. Answers uncovered when analyzing this confirmed the assumption that motivation and hygiene have approximately same effect on the respondents.

In company A, employees with a Bachelor's degree cannot perform the same work tasks as their colleagues with a PhD education. The way this company is structured, job descriptions are allocated based on education background. As company A mainly is a research institution, the PhD employees perform the research, and the employees with Upper secondary, "Other", and Bachelor's degree perform administrative tasks. Comparing company A to a hospital; a nurse cannot operate, and a doctor does not work with the financials. This is in many ways how company A is structured.

As was presented in the previous chapter, individual research was ranked relatively low from respondents with a Bachelor, "Other", and Upper secondary education background. This makes natural sense, as these three groups most likely do not perform individual research. Some of them might do some research, but this is not the main part of their job. Ranking this factor low when asked about motivation, will therefore be logical. However, this concrete factor did not rank highest with the PhD employees either, and the reason which is possible to name as the main argument, is the business model. Company A focuses on research and development towards the industry, and a lesser part of the PhD employees work on their own, individual research. This further confirm the response results, which scored second highest with the PhD respondents; Contributing to research and development.

The work itself scored in the upper part for all education groups, which can indicate that the employees are satisfied with their current work situation. The employees with lower education want to achieve and complete their specific jobs with the same excellence as their colleagues who

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<sup>27</sup> The survey had 5 initial questions mapping the respondents, but the actual survey started on question 6 in the attached survey (but these will be referred to as the first, second, and third question (and so on) in this chapter).

research. Work tasks being completed by these groups are mainly administrative, lab technicians, or facilitators. There are tasks during a research project which only can be completed by others than those who are performing the research, and their importance is just as relevant to complete projects. This can also be interpreted through the relatively high score from “my areas of responsibilities” response as well as the low score from “status” under hygiene factors. The research indicates that all employees regardless of education level play a significant role in their department.

In table 3, there were a few p-values indicating significance between the groups and their responses. As mentioned above, the work tasks are different based on education, which explains why responses varied between respondents with a Bachelor’s degree and a PhD. This also explains the difference between responses given by the respondents with Upper secondary education and PhD education. In addition, there was clear evidence of increasing trends between education levels in several of the motivation factors, emphasizing the origin of the p-values between lower and higher educations, again confirming Eskildsen et al. (2004). However, there is limited literature on previous research which has been conducted, so there are clear difficulties in confirming and/or denying the elements in these responses.

The education group “Other,” was represented by one single respondent which limits the significance of the p-values and will not be discussed further.

In company B, the differences between the responses as well as the trends, varied much less than company A. One main reason for this is also here, the work tasks. Company B operates with several roles that one can perform well in, regardless of education level. An employee with lower education, as well as one with a Master’s degree can perform the same job in many roles. Seniority and experience are just as important factors in this company. Operating under a consulting business model, there will definitely be different opportunities for employees who work hard, are dedicated to the workplace, and interested in investing time and capabilities. In addition, the “trait” in company B is not profession-based, which allows all employees to achieve regardless of scholar background.

*“Few of my employees get a master’s in business & administration with the sole intention of working with this, they end up here as a coincidence, and some use this job as a stepping stone towards other jobs; the client side, or other related jobs. Some end up staying and making this their career.”*

- Interview object B

Similar to company A, “achievement in my job” received highest score under motivation factors. The interesting observation is the difference in reasons for choosing this. Employees in company A may have ranked this the highest as they achieve on their own job level, while employees in company B may rank this the highest as their performance and achievement may give them more interesting tasks and projects in the future.

This assumption can be underlined based on the fact that the hygiene factor ‘recognition’ received the second-highest score from all education groups, as achieving in their jobs and being recognized may lead to increased development of capabilities and areas of responsibilities; two motivation factors ranked high with the respondents.

Furthermore, when analyzing the differences in responses between education groups, there were no significance proving that respondents answer approximately the same regardless of education background. There were no differences between motivation and hygiene factors either, so there can be drawn assumptions that on some level, all named factors contribute to motivation for respondents in company B and that education level is not relevant enough in this question, clearly disputing the previous research indicating differences in education levels regarding motivation (Eskildsen, Kristensen et al. 2004).

### ***5.3.2 Hygiene and Motivation factors affecting Job Satisfaction by Education Level***

The second question presented hygiene and motivation factors and their effect on job satisfaction. Previous research, as well as the assumptions formed, were confirmed, indicating that hygiene factors indeed contributed to job satisfaction, but that the differences between the given hygiene factors differed marginally to the given motivation factors.

In company A, the mean values from hygiene factors, were a little lower than motivation factors. However, this mainly concerned salary, pension plans, and flexible hours. Pension plan was the least important hygiene factor which stood out from the mean values. For the three groups including higher education; Bachelor, Master, and PhD; relationship with colleagues was the hygiene factor which received highest score. Assumptions around this result, may be the fact that the work environment is perceived as relatively good, which can be underlined by the given answers that good work conditions and job security also ranked high from these groups.

Interesting work was the motivation factor which received highest rank in company A, and this supports the answers given in the previous question. This was also the motivation factor which had an increasing trend based on education.

T-tests conducted for this question confirmed the fact that differences between education groups as well as differences between motivation and hygiene factors were not significant enough to be discussed. This was also indicated by the lack of clear trends; and except for the two factors which had increasing trends (Good work conditions and Interesting work), and the one factor having decreasing trends (Job security); there were clear evidence against the relevance of education level on the hygiene factors presented in this question of the survey. A reason for this may be related to previous research (Eskildsen, Kristensen et al. 2004), indicating that education level has an effect on *motivation* factors, but not necessarily hygiene factors.

In company B, the differences in responses were marginal, however, there were, also here, hygiene factors receiving a slightly higher score. For respondents with a Bachelor and Master's degree, relationship with colleagues and flexible hours received a relatively high score. Under motivation factors, the same groups ranked interesting work as the most important factor contributing to job satisfaction.

T-tests conducted proved the fact that there were no significant differences between answers given by respondents based on education level. There were no differences between hygiene or motivation factors affecting job satisfaction. Similar to question 1 (see previous section 5.3.1), all named factors contribute on some level to job satisfaction. In this case, there were clear representations of decreasing trends based on education level, and as many as three hygiene factors and one motivation factor had decreasing trends<sup>28</sup>. This also emphasizes previous research indicating education effects motivation factors more so than hygiene factors, which here were affected negatively.

### ***5.3.3 De-motivating factors if not present by Education Level***

The third question was asked in a different way<sup>29</sup> in order to receive quality assurance on the previous two questions, and was asked in an opposite manner; which factors are de-motivating if

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<sup>28</sup> Decrease: Job security, Relationship with colleagues, Physical office environment, and Positive feedback from supervisor. Increase: Recognition and Flexible hours.

<sup>29</sup> "The following factors de-motivate me if not present:" (See attachment – questionnaire).

not present and as mentioned in the previous chapter, there were significant results between education groups as well as between motivation and hygiene factors.

Company A's respondents ranked the given factors generally lower, especially respondents with a Bachelor's education. Job security was ranked lowest by this group, while higher education groups, Masters and PhD, ranked status as least important. There were some growing trends based on education level; Today's salary, Flexible hours, Recognition, and Job security received increasing scores as the education level got higher. This is the main explanation to the several significant p-values formed in this question, emphasizing differences between lower and higher education.

The group of respondents with a Bachelor's education generally differed from the other education groups. The reason for this can be that few of the factors apply to their work day. The named respondents may in fact not value the given factors, and are not motivated nor de-motivated by them. The answer response (3) was "indifferent", while (2) was "relatively disagree" – indicating that the given hygiene factors apply little contribution to de-motivation if not present, for respondents with a Bachelor degree. According to table 8 in the previous chapter, the main significant differences in responses varied between groups with lower and higher education. The respondents with a Masters and PhD education arranged the hygiene factors similarly, while the remaining three education groups perceive the effects of hygiene factors in the same way. One deviant p-value, was uncovered when comparing Bachelor with Upper secondary which goes against the above-mentioned assumption that education level determines the role of hygiene factors in this question. One can assume that these two groups have different works tasks, where the given factors play different relevance roles in the employees' everyday life.

Except for respondents with a Master's degree, there are no differences between the answers under hygiene or motivation factors, which is interesting according to the theory on which the research is based.

Herzberg (1959) argues that hygiene factors contribute to dissatisfaction if not present. In line with this definition, there were expectations around high scores under hygiene factors. The respondents were expected to strongly agree that the given hygiene factors would contribute to dissatisfaction and de-motivation if not present. Not only was this not the case, but the given motivation factors, which are defined as motivating if present, but not de-motivating if not present, were expected to be given low scores in order to satisfy the theory.

The initial reason for this may be difficult to determine. However, underlining the fact that this research method differed substantially from the one Herzberg performed may be a contributing factor to the gap in results. If one method is more correct than the other will not be further discussed, even though the survey-design may be fitted for the time-periods in which they were conducted. Another reason for this question to generate different results from original theory, may be the fact that the surveyed knowledge workers are generally higher educated than the sample used in the initial research from that time. The respondent selection used in 1959 may have been lower educated than the selection used today, and there are great differences in work tasks as well as business models. Herzberg's respondents belonged to a time-period where the Western world was greatly industrialized, and there were fewer attending higher education institutes. Today's respondents are, as underlined in the research question, knowledge workers, and their expectations, frames of references, and work tasks are vastly different.

Furthermore, this underlines the assumption from earlier in the research indicating that dividing motivation and hygiene factors may be more limiting in today's research. Other researchers have mentioned this as well and have discovered the importance of hygiene factors as the standard of living and employment has changed over time (Wiley 1997).

The groups within company B rank hygiene factors somewhat differently than company A. Today's salary receive a score of 4,41 from the group with Master's degree, and this underlines the theory from Herzberg; hygiene factors contribute to dissatisfaction if not present. However, the same group has also ranked the given motivation factors, creating results and developing own capabilities, as even more de-motivating if not present which contradicts Herzberg and his theory stating that motivation factors do not contribute to de-motivation if not present; just absence of motivation (Herzberg, Mausner et al. 1959).

Response differences between the groups were significant in the matter of hygiene factors and the contribution to de-motivation if not present. There were clear indications from the p-values in table 10 that the groups had different perceptions of hygiene factors. However, the groups did not differentiate between hygiene and motivation, and ranked all given factors relatively similar regardless of their hygiene or motivation origin. Except for Recognition and Status, increasing trends with the education level of the respondents in company B were uncovered.

The p-values were uncovered when comparing all motivation factors between two education backgrounds. Reasons for the differences originate from the answers given by the respondents, however, when examining table 9, there are little differences between education groups individually though most trends were, as mentioned, increasing. There can therefore be

assumptions drawn towards the fact that given relatively high standard deviations in several of the responses, this may be the main factor in the uncovering of differences. Only eight out of twenty-four standard deviations were below 1 which can indicate large disagreements within the answers. This in turn may be the reason for the p-values indicating significant differences between the analyzed groups.

There were apparent differences between education background when analyzing motivation factors, and one could have assumed more significance around these responses, however, the sample was smaller and the number of factors were fewer which may affect the p-values uncovered.

#### ***5.3.4 Factors inspiring to increased Performance by Education Level***

The fourth question asked the respondents to answer which factors inspired to increased performance. This question was the only one with a four-point scale where (4) was Very inspiring, and (1) was not inspiring at all. This being presented, company A ranked the factors as relatively inspiring and the mean values were high. The most inspiring factor for respondents with a Bachelor education was positive feedback from supervisors while making a difference in the world of R&D received the highest score from respondents with a Master's degree. The PhD educated respondents ranked the latter factor, as well as specific goal achievements highest. The respondents with "Other" or Upper secondary education ranked several factors as inspiring for increased performance.

The respondents with an Upper secondary education ranked the hygiene factors cumulatively higher than the other groups and compared to the motivation factors. The reason for this may be the fact that the work tasks performed by this group are largely dependent on the hygiene factors in order to physically perform their jobs. They may have more administrative responsibilities which makes them value the given hygiene factors higher than the motivation factors. There is a clear indication that making a difference in the world of R&D is not necessarily an important factor for increased performance for this specific group underlining the assumption of this group's work tasks. Another determining factor for this assumption is the p-values between Upper secondary education and the groups with higher education. They have significant p-values on all comparisons under motivation factors when compared to Bachelor and Master education. There were in addition, significant p-values under hygiene factors when comparing them to their colleagues with a PhD and the "Other" group.



Comparing motivation to hygiene factors, significant differences are shown in the PhD group, the “Other”<sup>30</sup> group, and the Upper secondary group. This indicates, especially in the case of PhD and Upper secondary, that motivation factors may contribute more to performance for higher education level, and the importance of hygiene factors may be present with the lower education level. This confirms the studies performed by Story et al. (2009) who used the two-factor theory in examining performance and the effect on achievement and motivation based on extrinsic and intrinsic factors.

Company B had smaller differences between the education groups which may be argued as logical based on the nature of the question. Factors inspiring to increased performance, may, as indicated with company A, be based on which work tasks one possesses. However, the variations between work tasks are smaller in company B and the relevance of educational background is equally small, the factors contributing to increased performance was suspected to be ranked somewhat similar.

Developing academic skills was ranked highest in the Bachelor group, and respondents with a Master education ranked Creating results for interesting clients as most inspiring. The “Other” group included respondents with some higher college education, and they ranked the two latter factors as the most inspiring, equal to their higher educated colleagues. Upper secondary respondents ranked positive feedback as most inspiring, although there were little differences between the given responses from this group; both in terms of motivation and hygiene factors. Salary and benefits was the hygiene factor receiving the highest score from the respondents with a Bachelor and Masters education, while “Other” ranked company B’s reputation as the hygiene factor inspiring to increased performance. There were some trends in the results, mainly decreasing; High expectations, Work environment, and Salary & Benefits had diminishing trends based on education level. Specific goal achievements and Creating results for interesting clients had an increasing trend supporting previous research indicating that factors determining intrinsic values and self-actualization, contribute to motivation based on the higher level of education.

The researcher generated this question in order to get a more clear impression on what can be considered motivation factors in today’s day and age. The results underlined the assumption that even though motivation factors are theoretically more important than hygiene factors, the employees value salary and work environment as well, which is confirmed in the lack of

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<sup>30</sup> As mentioned, this group has only one respondent.

difference between the motivation and hygiene factors. The respondents answered similarly when ranking these factors, and once again, defying Herzberg's theory.

### ***5.3.5 Factors contributing to Satisfaction by Education Level***

Question 5 requested the respondents in completing the sentence "I receive great satisfaction in..." with a number of responses. One reason for wording the question in this way was to examine respondent's perception of differentiating between motivation and satisfaction. Herzberg's theory clearly indicated hygiene factors as contribution to job satisfaction, while motivation factors contribute to motivation. However, the researcher was interested in examining the assumption that motivation factors indeed contribute to job satisfaction as well, and that once again, the labels given all factors in the initial theory are more limiting than opportunistic as indicated by Carolyn Wiley and other previous research (Maidani 1991, Wiley 1997).

Analyzing the mean values for motivation factors in company A, the "Other" group has generally ranked all factors slightly higher than its colleagues, which is confirmed in the p-values uncovered based on the t-tests. However, as mentioned in 5.3.1, this group is only represented by one respondent, and based on the high mean values in the other education groups, there may be respondents ranking the factors just as high as this individual, but naturally will not be as transparent based on the population giving the answers.

Furthermore, it is apparent to the reader that the hygiene factors were ranked lower as well as having a decreasing trend, especially with the higher education groups, and promotion possibilities received the lowest score from these respondents when asked about job satisfaction. Social interactions with coworkers stand out as the highest satisfaction factor for the Master's, PhD, and Upper secondary education group. Based on the mean values presented in table 15, respondents with a Bachelor's education generally ranked the hygiene factors higher than the PhD respondents, which is shown in the p-value table 16 as well. There is a significant difference between responses from the two groups, which is assumed to be rational as the work tasks for the two groups include a different level of hygiene factor presence during the workday. There were decreasing trends uncovered under hygiene factors underlining the fact that these named factors have diminishing values as the education level increases. This in turn is supporting the assumption of the relevance of these factors to the work tasks. The same assumption can be argued as relevant when comparing the Master's group with the Upper secondary education group; and yet again confirmed by the p-value after comparing Upper secondary to PhD

respondents. In company A, there is a clear difference in the roles of motivation and hygiene factors based on works tasks. How a knowledge manager shall take this into consideration when motivating and leading his employees, will be discussed further down.

There is far more coherence between the respondents in company B regarding this question. The mean values do not differ too much, and the standard deviation indicate little disagreement between the respondents. Developing knowledge and skills, as well as creating results for the company and clients, stand out, once again as the key motivation factors on all education levels.

*“By working with other competent workers, learning from colleagues and acknowledging that others have different strengths is a motivation factor, as well as having interesting clients; we work with some of the largest companies in Norway, which is perceived as an important factor as well.”*

- Interview object B

The indication received by the informant ahead of developing the questionnaire, as well as forming assumptions around the answers received, indicates clearly that interview object B has somewhat of an insight regarding his employees and what motivates them. Furthermore, having a social work environment scores relatively high with company B as well, and even though this factor is most likely present at all workplaces, the importance of thriving on the workplace will essentially come down to the social interaction with the people one works with. This correlates with previous research stating that some companies use workplace as a way of retaining valuable employees which secures intellectual and social capital (Brenner 1999).

Status receives the lowest hygiene score from all education groups, which again confirms previous results from this company’s answers on hygiene factors.

### ***5.3.6 Arranging factors based on Employment Relevance (question 6)***

After analyzing five questions which have generated approximately the same impression regarding motivation and hygiene factors for both companies, the last question was not coherent with previous answers which lead the researcher to assume that this question was clearly misunderstood. Though the instructions stated to only choose the numbers between 1-10 *once*, as well as ranking the most important factor with the number (1) and the least important factor with

number (10), this was not followed through by more than a total of 26 respondents, or 26%.

**This does not generate a large enough sample to use the question in a scientific manner.**

According to the received answers given by the Bachelor group in company A, Job security is the most important factor for employment. Although this is a theoretically correct employment reason, as once received a permanent position with company A, the employees are very secure for the future, this factor has not come across as an important factor for the employees through previous results. Receiving a permanent position with company A, usually applies to the PhD educated, which also underlines the level of incorrectness in this answer. Salary and benefits is ranked as the most important factor for employment with the Upper secondary education group, yet another answer not being coherent with previous results.

The least important factor of employment for the PhD respondents is Making a difference, a factor which has received high scores as motivation factors in previous questions.

Company B were no better off and Developing own knowledge and capabilities, previously ranked important, received the lowest score from several education groups. In addition, the little range between the numeric values, as several responses were ranked with high numbers, indicate that most factors were highly ranked, and the misunderstanding is confirmed, as the higher the number, the less importance the factor.

This question may have contributed to interesting finds if understood correctly, as the respondents were able to rank all factors with a larger scale.

#### **5.4 Discussions around how to motivate knowledge workers**

As indicated in the introduction, results from this research may not generate a template for managers in motivation their knowledge workers, however, having closely examined two different knowledge businesses, and uncovering interesting results, this thesis may act as a contribution to the literature in the large field of knowledge management and motivation.

Results are based on individuals and their personal perception. This makes the results somewhat subjective, though the small variations within the responses can indicate some level of objectivity applied to these types of workers. After the interviews were performed, the researcher came up with the impression that the managers of both company A and company B, had somewhat of an indication to what motivates their employees which contributed to the validation of the questionnaire. Had the responses varied greatly from the managers perceptions, there would be a

completely different type of research needed in order to map out how and what motivates the named knowledge workers. This confirms the previous research performed by Furnham et al. as well as Story et al. indicating the importance of regarding the different personalities when focusing on motivation of knowledge workers (Furnham, Forde et al. 1999, Furnham, Eracleous et al. 2009, Story, Hart et al. 2009).

As stated by interview object A, it must be taken into consideration that leading different personalities, with different education backgrounds, as well as different geographical backgrounds, is a demanding position. However, grouping the backgrounds may not necessarily operate as a blueprint. According to several of the results for his company, work tasks separate the employees in a larger sense, and as their work tasks are originated in their education, this may be the main difference in motivating and ensuring job satisfaction. Trying to motivate an administrative employee in the same way as one motivates a self-driven researcher, can be argued as a lost cause. Gender, age, and seniority may not play a significant role for this type of leadership, though these contributing factors are important to keep in mind (Wiley 1997).

Interview object B emphasized the importance of knowledge development and interesting clients, results which were found through the questionnaire as well. Unlike company A, the work tasks, though different, do not primarily differ based on education level. Personality plays an important role for the employment and seniority for these knowledge workers.

*“If an employee is wanted as a strong collaborator from several of our clients, or other workers define a specific employee’s personality to contribute a great deal in their every-day work life, these employees will be taken care of in our company.”*

- Interview object B

This statement underlines the assumption from the researcher diminishing the education background as an important factor for delegating work tasks. In this case, interview object B has a more demanding role in seeing the individual and his needs for motivation. He cannot generalize in the same sense as interview object A.

To elaborate the importance of the knowledge worker, the definition earlier in the research stated he is “one who thinks for a living” (Davenport 2005). In addition, some of these knowledge workers in both company A and company B know more about their specific work tasks than their manager which diminishes the possibility for the manager to directly tell them how to do their job. In these cases, the interview objects agreed upon their role as administrators, facilitators, and motivators. Transformational leadership is indirectly a pre-requisite in

successfully managing knowledge workers, as the employees want to follow and be led by their leaders. Though not being aware of this as a chosen leadership role, the interview objects are assumed to be in possession of this ability. Previous literature (Bass 2000, Nguyen and Mohamed 2009) indicates the fact that transformational leadership has a positive correlation with knowledge management, and through this research, the results indicated a confirmation of these studies based on the responses regarding 'feedback from supervisors' and 'infrastructural facilitation.'<sup>31</sup>

Both interview objects focused on their role as a leader as more of a supporting role, rather than the "one in charge". Though there is no mistaking who is, indeed, the highest leader, there is a more flat structure within both companies allowing all employees to address their leader without having to go through a long hierarchical chain of sub-leaders on different levels.

Interview object A is present during meetings when his employees are starting new projects, in order to communicate the importance of this project, though not having an active role while Interview object B participates in the daily life of his employees by not having his own office, and contributing to the "free-seating" arrangements established in this company. This indicates the downplaying the strictness of their leadership role in the company.

The results found during this research can be supported by previous research performed by Karen Carleton (2011). The indications that knowledge workers are driven by tacit knowledge and superior problems solving skills, the importance of retaining this group is an essential part of today's management. She argues that proper management and developing of skills contribute to retention. With no indication that hygiene factors play a role, there was clear recognition that "each knowledge worker is unique and is informed differently, based on their prior experiences."

Further, previous studies also indicate the relevance towards work tasks and employment, as motivation and retention strategies have been proven to differ based on the industry. In some companies, the focus is on intrinsic factors as main retainers, while other companies use extrinsic factors in ensuring employment for their top workers (Horowitz, Heng et al. 2003).

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<sup>31</sup> Two hygiene factors present in several of the questions in the survey

## 5.5 Discussions around differentiating between motivation and hygiene as executive categories

As mentioned previously in the research, Herzberg clearly differentiates between the importance of motivation and hygiene factors and their effect on the employee motivation and satisfaction. Refutation of this theory is not the main intention of this research, but the questionnaire was indeed worded in a way which could help determine whether this indeed is the case when analyzing knowledge workers in 2015. The main assumption formed was that categorizing factors in to these two groups acts more of a limitation than a valid explanation.

As indicated by Story et.al. (2009), personalities have an effect on motivation and job satisfaction, and they argue the significance of both elements; motivation and hygiene, which enforces this assumption. This has also been argued for by Furnham et al. (2009) and Wiley (1997) indicating the difficulties of forming clear templates for enforcing motivation and job satisfaction. As this is highly individualized, managers can, at best, receive somewhat of an indication, but performing surveys continuously regarding this, may help them better develop their own management skills (Wiley 1997, Horowitz, Heng et al. 2003, Furnham, Eracleous et al. 2009).

Supporting the above named assumption regarding the significance of both motivation and hygiene factors, the t-tests performed between the two groups, and their effect on the asked questions, proved insignificant. The respondents were not informed under which category the responses were placed, and they were asked on a general basis to rank the factors and their contribution to motivation, job satisfaction, performance, as well as the remaining questions. The researcher used Herzberg's definition, when categorizing the factors, and allowed this to be the indications for what played an important role.

The reason for forming this assumption in the first place, was the perception of changes in today's knowledge based society and the fact that using a study from a different country, from a different time, and with a separate type of economy, would logically not fully apply to the population of today's research. Comparing knowledge workers to industry workers, employees working in America during the 50's to employees working in Scandinavia in the year 2015, the 20<sup>th</sup> century to the 21<sup>st</sup> century, the technology available, and the evolvement of history may definitely contribute to differences in the results.

The number of people having a higher education in 2015 is higher than in the 1960-1970's<sup>32</sup> and constantly growing, which supports the research concerning the evolvement of the knowledge economy. The knowledge workers have different backgrounds, preferences, and expectations compared to the sample used in Herzberg's studies. They are more aware of their value and how they contribute to the work force. The world has figuratively gotten smaller, and access to knowledge and technology across country and continents has opened up for a whole new information and knowledge society. Knowledge workers have access to attending the best academic institutes in the world, and they can choose to work in countries which supply the most interesting jobs and opportunities. Competition has grown and knowledge workers expect great stimulation of intrinsic factors; be it developing capabilities and knowledge, having interesting work tasks, great job achievements, and self-actualization. These factors have become hygiene factors for some of the best knowledge workers, they expect them to be there – they completed higher education in order to be qualified for jobs who offer this, and if not present, the knowledge worker will not even consider employment possibilities.

What about the “old” hygiene factors? If Herzberg's motivation factors are degraded to necessities, what has happened to salary, work space, relationship with colleagues? Have they been even more degraded as well, and what has taken the place of the old motivation factors?

According to this research, the predetermined hygiene factors have not been degraded in the same sense as one can argue the motivation factors. However, the importance may be equal, and the gap between motivation and hygiene has slowly closed. A knowledge worker may answer that his expectations around an interesting job are coherent with his expectations towards a good salary. The population is generally better off both in terms of standard of living and opportunities. Though there are large differences within the world population, the quality of life has in most ways improved over the last sixty years.

Categorizing motivation and hygiene factors had a higher purpose when this theory was first developed; the work tasks were repetitive and contributed to little inspiration among the workers performing them. The values of today's population have changed and the work tasks are more and more a contributing factor to motivation and job satisfaction, and in this case, amongst knowledge workers.

On the other hand, there has to be exercised caution when stating this and generalizing between motivation and hygiene factors. It can be argued that it is strictly individualized. There are

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<sup>32</sup> <https://www.ssb.no/utniv/>



knowledge workers who are only interested in digging deep in history, social developments, or other fields who are genuinely motivated by finding answers, contributing to information availability – and might as well have done these things for free. There are also the highly incentive driven knowledge workers which were previously discussed, who are motivated by salary, bonus, or other incentives; for instance stockbrokers or sales people where it “does not really matter what they sell as long as they make money and achieve success.” (Kuvaas 2008)

Though very generalizing statements, the importance remains clear; as the term “knowledge workers” is so widely defined, so will the population belonging in this definition also have a wide span. Naturally, there will in this case be clear differences between what motivates the latter group, and how they indicated this through increased job performance. Knowledge workers may not necessarily stay in one job during their whole career, but increased opportunities and benefits may diminish knowledge workers loyalty. However, having a clear understanding of what a manager may do in order to retain his most valued employees may, in best case scenario, postpone a knowledge workers need for job changes, but this must include both extrinsic incentives and benefits as well as intrinsic opportunities and self-development (Carleton 2011).

## 6. Conclusion and Further Research

### 6.1 Conclusion

*“Never before has the motivation and retention of knowledge workers been more critical for organizational sustainability than it is today” (Carleton 2011).*

This is the concluding statement of previous research performed by Karen Carleton and is most definitely part of my conclusion to this thesis as well.

The impressions left to the reader as well as the researcher may clearly indicate that Herzberg’s “Two-factor” theory is somewhat outdated. Differentiating so boldly between motivation and hygiene factors may be a limitation when discussing employee motivation and job satisfaction. Whether there are clear factors affecting this in today’s knowledge society rather than an overall package involving elements effecting different personalities, was another assumption being formed as the researched progressed. Though the most interesting element of this research was the lack of difference between predetermined motivation and hygiene factors, the reason for this has been explained in the sense that it depends on the personalities and backgrounds of the worker. However, one must go through an even more extensive research process in order to map out what indeed is the fundamental reason for this, but that means moving towards fields like psychology and human behavior which is outside the purpose of this thesis.

The research question: “***Which motivation and hygiene factors shape knowledge worker’s job satisfaction?***” has been answered in the sense that the overall answer may be: all of them. Some in a larger sense than others, but ultimately, most predetermined motivation and hygiene factors contributed on some level to the surveyed knowledge worker’s job satisfaction. Though there were expectations towards receiving higher scores from the motivation factors, the primary assumption formed during the interviews made the researcher be vastly aware of the fact that hygiene factors indeed played a significant role. When confirmed in the questionnaires sent out to the 100 respondents, the researcher formed yet another assumption; the fact that motivation versus hygiene differ insignificantly. This was yet again confirmed when the analytical tests were performed in order to closely examine the differences in mean values generated from the survey.

Knowledge workers are already a homogenous group who stand out based on their educational backgrounds, their areas of expertise and interest, as well as their continuous drive to contribute to something larger. This may be the reason for such a clear agreement stating the relevance of

motivation and hygiene factors. However, the sample selected, represented two vastly different groups of knowledge workers and their work tasks. The business model for both companies have clear differences, indicating that there are different personalities one has to take into account. The concept of customizing management styles in order to fit each knowledge worker, will be too extensive and demanding for any knowledge manager, regardless of his capabilities and previous achievements. It will be crucial for these managers to somehow form a communicative relationship with his employees which promotes a stable work environment containing development of skills and knowledge, as well as being an attractive workplace where knowledge workers thrive and want to be employed. Underlining this, there are clear indications of the importance of both motivation and hygiene factors, and finding a balance between these, as well as managing them and the employees correctly, may prove expedient when managing knowledge workers.

Further, it was possible to confirm the assumption formed for company A, stating that there would be uncovered some differences between education background of the respondents. As work tasks differed based on education, it was found that the main difference in motivation and job satisfaction could be bulked based on education. Which again implies the significance for interview object A to be aware of his role as a motivator and contributor for each of these employees. Though being somewhat aware of his main focus as an administrator and facilitator for his employees, this specific way of managing applies mainly to his higher educated employees, and the administrative employees may have a need for more specific follow ups as well as feedback on tasks and job performance. In addition, personalities as well as work tasks, play a significant role in the responses generated by the survey, and having a clear conception of what his employees are in need of, is also proven to drive motivation and job satisfaction for employees with company A.

Opposite to these assumptions, company B have confirmed the fact that education level has no significant effect on the responses, and that their work tasks differ based on individual skills and interests. Interview object B will have a more personal touch when motivating his employees and not necessarily being able to treat particular groups in a specific manner. Teamwork is the main form for work execution. The importance of each worker and his/her skills promotes the feeling of self-worth and plays a significant role in the company, which was visible to the informant. For informant B to successfully contribute to motivation and job satisfaction towards his employees will differ in a greater sense based on personalities.

## **6.2 Limitations and Implications to the Research**

The fact that this research has been performed over a period of one school semester indicates limits to its extensions. In addition, being the author's first research work will also contribute to minor faults. These being the following:

- The questionnaire may have been developed in a different manner with more knowledge and previous preparations which the research did not hold at the time. Even as the results began to be analyzed, I saw flaws in the wording and especially regarding the last question which was so clearly misunderstood. It would have been prepared in a different way at another time. This concrete question could have contained additional and interesting results and may have let me form an even deeper understanding on specific factors contributing to motivation and job satisfaction.
- There could have been a question asking the respondents to concretely form own factors which contribute to motivation and job satisfaction, though this would have been demanding for the analysis on this level of research
- There could have been more companies selected. I could have chosen two companies within the same industry which would allow me to directly compare the differences in work environments and norms which may have had an effect on the responses from the surveys. If I had chosen four companies, I would have had more informants who may have given me different motivation and hygiene factors, and there would have been more respondents in the survey which could contribute to a broader view.

However, regarding these limitations, one can argue that this research may have managed to contribute to the views on Herzberg's "Two-factor" theory and based on previous research which indicates approximately same views, the fact that using knowledge businesses and mixed methods may be useful further on.

## **6.3 Further Research**

Researching within Human Resources is an extensive progress and as well as time consuming- One has to be aware of and consider the "human being" factor. In this case, receiving clear indications that contribution to motivation and job satisfaction is highly individualized, there will most likely be differences based on work environments, tasks, and industries. A third-party researcher in the field of business and economics, or human behavior psychology will potentially be able to study this specific area with great depths. However, this may just as well be a job for

employees working in the HR department of the specific companies and having a more extensive knowledge to both the management styles and the industries expectations to the workers.

In addition, using questionnaires in order to determine motivation and hygiene factors, as well as interviewing employees, mapping out their drive and their personalities, will give a deeper understanding towards how to manage them in the best way. Literature needs to have more contributions towards motivating knowledge workers. However, if academic researchers are the right group performing this research or if this should be done by managers who operate with these challenges every day, may be a discussion worth having.

In a Norwegian business newspaper, Dagens Næringsliv, there was, at the end of this study's time-frame, published an article about Swedish knowledge businesses who had introduced six-hour work days and emphasizing the fact that "*...when one thinks for a living, we are convinced that eight hour work days is too long*".<sup>33</sup> These businesses had not only increased motivation and job satisfaction, but also performance and results. A clear hygiene factor as "flexible hours" or in this case, "shorter work days," would be an interesting future study spin off from this specific thesis. This emphasizes the conclusion of this study: hygiene factors may play a more significant role in today's knowledge environment.

Conclusively, the need for further research on how to motivate knowledge workers as well as determining factors contributing to this, are we in great need of. In which sense is outside the elements of this paper, but having uncovered the interesting facts in this thesis, opens up for a desire towards finding out more and coming to terms with the faulty literature available today. I hope that we will see a more concrete development during the next fifty years.

Emphasizing Furnham et al. (2009); "*...work attitudes are not the product of situational factors alone, and that both literature and organizations should further investigate the variables that contribute to these values with the intention of increasing job satisfaction and performance...*"

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<sup>33</sup> Dagens Næringsliv, Magasinet, Saturday, November 28th 2015.  
<http://www.dn.no/magasinet/2015/11/27/2127/Arbeidsliv/-nr-man-lever-av--bruke-hodet-er-tte-timer-for-lenge>

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## 8. Attachments

### Interview Guide

#### Interview guide – managers of knowledge businesses A and B

#### ***Which motivation and hygiene factors shape knowledge worker's job satisfaction?***

- I. **Chat**
  - a. Develop a good atmosphere
- II. **Introduction (ca. 5 min)**
  - a. Presenting the background for the interview
    - i. Introduce the master thesis and underline the company's role and its employees – important for the informant to be aware of before the interview.
  - b. Focus on the fact that the interview is voluntarily
  - c. Ask for permission to record
    - i. Will be deleted upon completion of thesis.
  - d. Inform that all notes can be sent upon request after being adapted as well as the final paper
  - e. Present the survey in its form so far in order to receive input on questions which are relevant or not.

#### **1) Can you please tell a little about your company and your position? (ca. 5 min.)**

- Who is the informant, position, background
- How long have you worked with company A/B?
- How long have you had a managing role?
- What is the company's business model?
- Please elaborate on the employees, how many, education and so on.
- What do the workers do in the company
- How big is the company?

#### **2) What is it like being a manager of a knowledge business? (Max 10 min.)**

- Pros, cons, challenges?
- How do you promote an organizational structure which strengthens the involvement of your employees?
  - o Ownership culture
- How do you retain and recruit your employees?
- How do you maintain the tacit knowledge which your workers possess?
- How do you keep your best employees from leaving the company?
- Do you send your employees to conferences or other knowledge developing courses?

**3) How do you motivate your employees? ( The goal with this question is creating a dialogue about motivation and job satisfaction. Emphasize on getting an impression around the employees' workday, what the management does in order to motivate the employees – map the hygiene factors) – Main part of interview - estimated time: 30 min. (MAX)**

- Do you have a clear perception about what your employees view as motivating?
- Do you have any measuring tools indicating whether your employees perceive job satisfaction?
- Do you focus on motivation as a leader?
  - o If yes, how do you know that they are motivated?
- How do you focus on motivating the employees and which elements do you think contribute to your employees being both motivated and experience job satisfaction?
  - o Office space, the option to work from home, autonomous work, challenging tasks ++
- In your opinion, which hygiene factors do you have as basic elements in you workplace?
- Do your employees have the opportunities of developing their own capabilities?
- Do you challenge your employees in their work tasks?
- Which factors do you think would be perceived as de-motivation if not present?
- How does the work environment seem to your employees and to you?
- How do you create an efficient work place?

**4) Questionnaire being sent out to the employees (ca. 5 min.)**

Present the survey as it is so far-

- What does the informant wish to include in the survey?
- How should we move forward in distributing the survey

Ask if he wants to include something at the end.

End and thank him for his time

# Questionnaire

## Motivation and job satisfaction

Thank you for taking time to answer this survey.

Its goal is to analyze factors affecting motivation and job satisfaction.

The survey will take approximately 5-8 minutes, and all answers must be answered before completing.

1) \* Please select gender

Female  Male

2) \* Please select age

20-25  26-30  31-35  36-40  41-45  46-50  >51

3) \* Please select birthplace

Norway/Scandinavia  Western Europe  Eastern Europe  Asia &  
Oceania  Africa  North America  South America

4) \* Please select highest completed educational degree

Upper Secondary School  Bachelor  Masters  PhD  Other

5) \* How long have you worked at company A/B?

0-3 years  4-5 years  6-15 years  16-20 years  >21 years

6) \* The following factors are the most important for my workplace motivation:

	Completely unimportant	Relatively unimportant	Do not apply	Relatively important	Very important
Achievement in my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recognition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The work itself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My areas of responsibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advancement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Possibility of growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contributing to research and development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing new technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Individual research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working towards a better future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Salary and benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interesting clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The freedom during my workday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The knowledge of my co-workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Autonomy

**7) \* The following factors are important for my job satisfaction**

	Completely unimportant	Relatively unimportant	Do not apply	Relatively important	Very important
Salary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good work conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relationship with colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interesting work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing skills and knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructural accessibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pension Plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexible hours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical office environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positive feedback from supervisors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recognition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**8) \* The following factors de-motivate me if not present:**

	Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
Today's salary level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexible hours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work recognition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making a difference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Developing academic skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work environment (office space, infrastructural equipment, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing own capabilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9) \* The following factors inspire med to perform better:

	Do not inspire at all	Irrelevant	Somewhat inspiring	Very inspiring
Developing my academic skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Specific goal achievements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positive feedback from my supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teamwork	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My work environment (Office space, lunch options, colleagues)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making a difference in the world of R&D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salary and benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The company's reputation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating results for interesting clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10) \* The following statements are relevant to me;

	Strongly disagree	Disagree	Not relevant	Agree	Strongly Agree
I receive great satisfaction in knowing that I am working for a better world	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive great satisfaction in developing my own knowledge and skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive great satisfaction in receiving recognition for my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive great satisfaction in having a safe workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive great satisfaction in developing technology which is used by the industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive great satisfaction in having a lot of responsibility in my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive great satisfaction in managing my own work day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive great satisfaction in today's tangible perks (salary, pension plan, health benefits, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive great satisfaction in the infrastructural facilities available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- I receive great satisfaction in knowing that I have many promotion possibilities
- I receive great satisfaction in having social interactions with my coworkers

**In the following question, please select each number only once:**

11) \* On a scale from 1-10, range which following factors are important for your working at IFE (1 being most important, 10 being unimportant)

	1	2	3	4	5	6	7	8	9	10
Salary and wage benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job Security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research and Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Academic development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making a difference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good work conditions (the office space, lunch)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructural facilities needed for my research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interesting work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acknowledgement and promotion opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## E-mail sent out to Respondents

Hi,

My name is Rakel Elisabeth Filtvedt and I am a master student at Norwegian University of Life Sciences in Ås (NMBU).

I am currently working on my master thesis with the research question: "***Which motivation and hygiene factors shape knowledge worker's job satisfaction?***"

In this research, I am interested in answering what motivates you and what determines your day-to-day job satisfaction.

The survey will be sent out through IFE internally so that it maximizes your discretion and it is completely anonymous, so please feel free to keep this in mind while answering.

I appreciate each answer I receive and hope that you will take the time to answer this survey. It shall only take you about 5-8 minutes to respond. Please have the answers in by September 10th.

In advance, thank you very much.

English link:

<https://response.questback.com/rakelfiltvedt/etf51sneu6>

Norwegian link:

<https://response.questback.com/rakelfiltvedt/aioo513jtw>

Sincerely,  
Rakel Elisabeth Filtvedt  
Ås, 25.08.15





## Follow- up e-mail sent out to the two companies

Hi,

To all of you who already have answered the survey referring to motivation and job satisfaction sent out last week; Thank you very much! You may also disregard this email.

To you who have yet to complete the survey, I am hereunder sending out the link one more time in order to give you the opportunity of answering by **next Thursday, September 10<sup>th</sup>**. The survey only takes about 5-8 minutes to complete.

English link:

<https://response.questback.com/rakelfiltvedt/etf51sneu6>

Norwegian link:

<https://response.questback.com/rakelfiltvedt/aioo513jtw>

Again, thank you all for contributing to the research!

Sincerely,

Rakel Elisabeth Filtvedt

Master student at NMBU (Norwegian University of Life Sciences)



Norwegian University  
of Life Sciences

Postboks 5003  
NO-1432 Ås, Norway  
+47 67 23 00 00  
[www.nmbu.no](http://www.nmbu.no)