NORGES HANDELSHØYSKOLE

Bergen, 20.06.2012

External Consultants and Knowledge Sharing

- A Comparative Study of Permanent Employees and External Consultants

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Master Thesis in Strategy and Management

NORWEGIAN SCHOOL OF ECONOMICS

Preface

This thesis is written as part of a research project at the Institute of Research in Economics and Business Administration (SNF).

External consultants hired through third parties for short-term contracts have become increasingly common in the past decades. I expect it to be a relevant career path for myself in the future. Therefore, this research project immediately drew my attention as an interesting topic to study. Writing this thesis has been a challenging and educational experience. It has given me great learning and respect for various fields of research.

My sincere thanks go to the organizations that have taken part in this study. Without the cooperative efforts of the organizations that agreed to participate, this research would not have been possible.

I would like to sincerely express my gratitude to my thesis advisor, Torstein Nesheim, for his excellent guidance and constructive suggestions throughout the process. I would also like to thank Karen M. Olsen for assistance with the statistical analysis. Finally, I would like to express my appreciation to my statistics professor, Chris Higgins, who taught me the value of statistics in the research process.

Bergen, June 20th, 2012.

Janne Smith

Abstract

This empirical study is an examination of permanent employees and external consultants and the factors that affect their knowledge sharing behavior. It aims at answering the research question:

What factors enhance knowledge-sharing behavior of external consultants, in comparison with permanent employees?

A quantitative method is used to collect and analyze the empirical data, collected from the oil and gas industry in Norway, an industry with growing use of external consultants.

Past research on knowledge sharing has been conducted mainly on standard work relations. Thus, the theoretical framework and hypotheses are developed on this basis. Due to the nature of external consultancy work, the main hypothesis of this research is that external consultants are more reluctant to share knowledge. As employment contract is expected to influence an individual's attitudes and behavior, this study compares permanent employees and external consultants along several factors that may affect knowledge sharing behavior, namely: organizational support, integration, organizational commitment, trust, individual motivation, and job autonomy.

The results of this research found no significant difference in knowledge sharing behavior of permanent employees and external consultants, while organizational support, trust, and intrinsic motivation were found to be important factors enhancing knowledge sharing between employees. Results also show that external consultants are more extrinsically motivated and have a lower perception of job autonomy than permanent employees, which may have implications for individual initiative and accountability.

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1. Chapter 1: Introduction

This chapter will introduce the background and the problem statement of this research. Furthermore, the scope and structure of the study will be presented.

1.1 Report Background

Global trends such as financial volatility, increased competition, and fluctuating demand are affecting businesses in a way that requires them to be more flexible and adaptive to changes in a highly dynamic environment. Technological change is accelerating and businesses need to continuously find new resources to secure competitive advantage. To achieve a competitive advantage, firms are dependent upon its resources and capabilities (Besanko, Dranove, Shanley & Schaefer, 2010). Today, as most resources are easily acquired or imitated by competitors, one important resource to competitive advantage is human resources. "Human resources are especially valuable to knowledge-based firms because of their ability to create, use, and share knowledge" (Jackson, Hitt & Denisi, 2003).

As a consequence of globalization and the growth of information communications technology (ICT), there has been a shift from production-based to a knowledge-based economy (Carrillo, 2004). Knowledge has gradually become the most critical organizational asset to sustain competitive advantage for any enterprise (Connelly & Gallagher, 2004). Once knowledge assets are acquired, organizations and human resource systems must be designed in a way that best enables employees to use that knowledge and increase the firm's competitiveness (Jackson, Hitt & Denisi, 2003). Indicative of this trend, a voluminous measure of knowledge management theory has researched the importance of sharing knowledge within organizations (Bartol & Srivistava, 2002).

Knowledge sharing is stated as a key process in translating individual learning into organizational capability (Lam & Lambermont-Ford, 2010). A central barrier is the individual's willingness to share and integrate their knowledge. Therefore, there has also been plenty of research on what enhances knowledge sharing within organizations. The majority of the existing literature on knowledge sharing theories and frameworks assumes the traditional employer-employee relationship with a standard work contract. Standard work contracts implied that work was performed full-time, continued indefinitely, and was

performed at the employer's place of business under the employer's supervision (Kalleberg, 2000, ref. Connelly & Gallagher, 2004). However, recent decades depict a changing labor market with more competitive recruiting and faster turnover of younger people (Martins, 2012). External work arrangements, such as temporary work, independent contracting, and leasing of personnel have become increasingly common. Work contracts deviating from the traditional permanent employee contract implies that the incentives and conditions that affect an individual's behavior are no longer the same. Therefore, well-established behavioral research topics have been "re-tested" in the context of non-standard employment relations (Connelly & Gallagher, 2004).

As research on non-standard employment relations has increased during the last several decades, it has shown that these external work arrangements may not only be a way to adapt to the changing labor market conditions, but are also a rich source of innovation and competitive advantage. Obtaining competence from people not directly employed by the firm enables it to access knowledge, bring in new ideas and create an innovation-stimulating competence mix with the firm's employees (Nesheim, Kalleberg & Olsen, 2005). This is particularly relevant for the non-standard workers who are hired as external consultants, either as independent contractors, or through a third-party, such as a professional consultancy agency and are often used in the core functions of the firm (Nesheim, 2002; Olsen, 2006)

Furthermore, as research indicates that hiring external consultants can bring in specialized knowledge, firms should be aware of the implications in the use of non-standard workers as they relate to existing permanent employees (Nesheim, 2002b; Connelly & Gallagher, 2004). Therefore the question remains, when external workers with specialized skills are hired, how can organizations exploit and retain the knowledge embedded within these individuals? Will mechanisms that enhance knowledge-sharing behavior for standard permanent workers also apply to external workers whom have a different contract and relationship with the organization?

The aim of this research is thus to compare knowledge-sharing behavior of standard permanent employees with external workers.

1.2 Research Question:

The research question of this study is formulated as follows:

What factors enhance knowledge-sharing behavior of external consultants, in comparison with permanent employees?

In order to answer the research question a thorough review of the relevant literature and theoretical frameworks is studied. Knowledge sharing theories are well established in the context of standard workers, and research on non-standard workers has increased in the recent decades. This provides the basis for hypotheses testing. The empirical data will be collected from the oil and gas industry in Norway, an industry with growing use of external consultants. A quantitative method for collecting and analyzing data is applied. Finally, main research findings with implications for human resource management is identified and discussed.

1.3 Scope & Structure

There are contractual differences among the various forms of non-standard work contracts (Connelly & Gallagher, 2004). Non-standard work contracts include temporary work, part-time work, independent contracting, and leasing of personnel. The focus of this research is the leasing of personnel: external consultants leased through a third party. This decision was based upon the empirical context of the study. This is a very common external work arrangement in the oil and gas industry. The chosen industry is also knowledge-intensive industry making it highly relevant with a focus on knowledge sharing.

The next chapter of this thesis provides a theoretical background and overview of external work arrangements and knowledge sharing theories. Relevant concepts along with a theoretical model are proposed, and on this basis, the hypotheses are presented. In Chapter 3 the research design and the method chosen to collect and analyze data to answer the research question is described. In this chapter the credibility and reliability of the method is also considered. Chapter 4 presents the results of the analyses of the data followed by a discussion of the research findings and their implications in Chapter 5. The final chapter is the conclusion with a summary of the main findings, limitations of the study, and suggestions for further research.

2. Chapter 2: Theoretical Framework

In seeking to determine how management may enhance knowledge sharing behavior in their organization, it is necessary to fully comprehend some well-established and widely empirically supported knowledge management theories. In addition, to be able to compare these theories on standard employees with external consultants, an overview of research findings on external work arrangements will also be described.

This chapter begins by defining the concept of 'external work arrangements' to have a clear understanding of what type of contract an external consultant has, and why firms and workers choose this type of arrangement. Next, the concept of knowledge and knowledge sharing between individuals is clarified. Furthermore, factors that are expected to influence knowledge sharing between employees are presented, along with the hypotheses and a theoretical model.

2.1 External Work Arrangements

The conventional view of organizations has been the perception of a two-party relationship between employer and employee with clear organizational boundaries. In standard work arrangements it was generally expected that work was fulltime, continued indefinitely, and was performed at the employer's place of business under the employer's supervision (Kalleberg, 2000). Laws and social security systems were developed on this basis and most research within the areas of organizational psychology, human resource management, industrial relations, and labor market economics are based upon this presumption (Kalleberg, 2000; Nesheim, 2009).

The nature of the employment relationship has changed over the past decades and employees can no longer expect lifetime employment if they simply do their jobs well (Dexter, 2006; McLean Parks & Kidder, 1994, ref. Bartol et al., 2009). Since the 1980's there has been a large increase in the research of the use of employment intermediaries, in the form of temporary help agencies, consultancy firms, or independent contractors. External work arrangements are since then referred to with several different labels, amongst others: nonstandard employment relations, atypical employment relations, triadic work relations,

and contingent work. They all have in common that it is an aberration of the standard work arrangements, which were the norm for much of the twentieth century (Kalleberg, 2000).

Nesheim (1999) distinguishes between four different types of work arrangements: standard employment contract, fixed-term contract, independent contracting, and leasing of personnel.

a) Standard employment contract: open-ended two party employment relationship that is valid for an undefined period of time.
b) Fixed-term contract: short term relationship between two parties that is required to have a specified length. It is mainly used when i) the characteristics of the work demand it and is different from ordinary tasks, or ii) substituting standard employees that are sick, on vacation, or on leave.
c) Independent contracting: also referred to as outsourcing, when the firm decides to buy the service from another enterprise. The external, supplier firm is responsible for the organization of the work, the quality of it, and the employees that perform the work.
d) Leasing of personnel: a three-party arrangement involving an employee, an employer, and a client firm. The client firm is responsible for the direction and organization of work, while a third party acts as the formal employer.

This research is focusing on two groups: 1) the standard employment contract, and 2) leasing of personnel. The standard employment contract creates predictable and stable employment relationships. For the employee, it includes job security and a dependable, stable income, while for the employer it means they know the size and stability of their workforce, making it easier with long-term planning, prediction of production and costs (Colbjørnsen, 2003).

The leasing of personnel is a type of contract with a three-party arrangement involving an employee, an employer, and a client firm. The client firm is responsible for the direction and organization of work, while a third party, the supplier firm (most often a temporary help agency (THA) or professional consultancy company), acts as the formal employer, and is thereby responsible for hiring and payroll. The client firm buys the right to manage a worker over a certain period of time. It blends between the fixed-term contract and the independent contracting. As with fixed-term contracts, the client firm is responsible for the organization of the work and other HSE (health, safety and environment) issues, but the formal and legal responsibility for the employee lies with the supplier firm (Nesheim, 1999). The use of these

kinds of employment intermediaries creates ”triadic” employment relations among the client firm, the contracting company or temporary help agency, and the employees of the contractors or temporary help agencies (Nesheim, 2005). The “differences between agency temporaries and contract company workers relates to who directs their work (Kalleberg, 2000); however, in practice the way in which the supervision and direction takes place in client-organizations may be less clear” (Olsen, 2006, p. 97).

External consultants, the focus of this study, fall into this category of leased personnel; either from a temporary help agency that has a unit of specialized consultants, or a consultancy company that provides personnel for short-term contracts. These consultancy companies may also provide services, which in that case would be outsourcing. The use of external consultants with specialized competence has largely increased in the past two decades. Thus, most temporary help agencies have established specialized departments that provide high-skilled labor. Following the liberalization of The Working Environment Act in 2000, possibilities for the leasing of personnel were improved in Norway. There was no longer any limitation to which type of workers could be leased (Colbjørnsen, 2003). Some of those working as leased personnel may still have a permanent contract with their formal employer, the leasing agency. Earlier studies have traditionally focused on low-skilled workers such as those employed by THAs. As the market developed, research then went on to focus on more high-skilled workers such as technical and professional IT contractors (Olsen, 2006). More recent research in Norway has taken this research to another industry: professional engineers in the oil and gas sector. According to Lautsch (2002), there may be systematic differences in management practices due to their motivations for the use of external workers. The following section will provide reasoning behind the use of external workers and why individuals choose this type of work arrangement.

2.1.1 Motives for External Work Arrangements

Firms' Motives

Changes in the mid-1970's created economic conditions that made workers and organizations search for greater flexibility in employment (Kalleberg, 2000). There were incentives for both firms and workers to seek other forms of employment contracts. Nonstandard, external work arrangements reflect organizations' attempt to achieve flexibility in response to intensified competition and growing demand for numerical flexibility. Globalization increased competition and uncertainty among firms, which put greater

pressure on profits and flexible cost structure. Reasons for using external work arrangements are thereby most commonly described as an attempt by firms to drive down their cost structure and increase their ability to reduce or expand their workforce in order to rapidly match changing market conditions. This is described as numerical flexibility, when the organization can regulate the size of their labor force according to market demand (Kalleberg, 2003). This contrasts to the traditional intention of internalizing their workforces to develop their skills and protect them from competition in the external labor market (Kalleberg, 2000).

Other reasons for using external workers are for adjusting to seasonal changes, screening for recruitment, and special expertise (Olsen, 2006). Even though cost and flexibility were traditionally the major reasons for engaging external workers, benefitting from their specialized knowledge has become an important factor (Connelly & Gallagher, 2004). Studies show that many firms use external workers as 'technical experts' on important projects (Matusik & Hill, 1998; Nesheim, 2002a). Externalization may offer a firm a way to access highly specialized skills that are needed for only a short period of time, such as engineering skills that are needed only for a single project (Davis-Blake & Uzzi, 1993).

Employees' Motives

Changes in the mid 70's also brought about a higher unemployment rate and made it clear for workers that firms were unable to provide full-time wage employment for all workers (Kalleberg, 2000). This forced workers to look for other alternatives. They could no longer solely rely on a firm to provide job security.

Research still shows that the majority of employees prefer standard employment contracts to external work arrangements (Gullhaugen, 2010). The motives for choosing an external work arrangement are varying, where some can be defined as voluntary reasons and some are involuntary. For many, the choice of working as a consultant became 'involuntary' due to unemployment and the difficulty of finding permanent work (Barely & Kunda, 2004). Today, this motive for external work arrangements still exists. In difficult financial times, workers are laid off and have difficulties finding new work. External consultancy is for many a 'stepping stone' to permanent employment (Gullhaugen, 2010).

However, Gullhaugen's research (2010) also provides other reasons. First, due to insecurity with regards to personal preference for future career, external work gives them an

opportunity to try out different projects, and companies, and decide which direction they would like to continue in. Second, it simplifies the entire job searching process. The intermediary allocates a company that fits both the employer and the client with regard to both their preferences. A third reason discovered was "indifference". For some of the consultants in this research the choice of external work was random, based on their current situation, and other criteria were more important, such as the work itself (Gullhaugen, 2010).

Among the voluntary reasons to work as an external worker the degree of flexibility, autonomy, and variation in work tasks is highly valued. In addition, professional external consultants have in general a higher salary than regular employees. This possibility of higher wage and the flexibility that comes with external consultancy were found to be major factors in choosing external work (Barely & Kunda, 2004).

Some employees seek new challenges and are looking to develop new skills, and thereby see external consultancy work as an excellent opportunity. They are able to work on different projects of varying length, and build up a career based on this 'chain of projects' (Nesheim, 2005). It is usually the highly skilled and educated that actually prefer temporary consultancy work. It is less likely that they see this work as a 'stepping stone' to permanent work. This type of work gives them the opportunity to increase their skills and knowledge, and they appreciate the flexibility (Gullhaugen, 2010). According to Marler, Barringer, & Milkovich (2002), as job security and promotional opportunities within larger organizations decline, individuals may view multiple employer experiences in a positive light because it supports skill development, increases marketability, shifts career control to the employee, and perhaps results in better matching career and family life-cycle demands. Their security is thereby rooted in their own skills and ability to sell those skills in the external labor market (Marler et al., 2002).

How the worker perceives the work relationship therefore has an important impact on their decisions, attitudes, and behaviors (Gallagher & Parks, 2001). In order to answer the research question, this chapter will continue to describe the concept of knowledge and knowledge sharing behavior.

2.2 Concept of Knowledge

The concept of 'knowledge' has been defined and redefined in the literature several times and while many authors present valid definitions, the definition by Wang & Noe (2010) will

be applied for the purpose of this study. Wang & Noe (2010) define knowledge as information processed by individuals including ideas, facts, expertise, and judgments relevant for individual, team, and organizational performance. In other words, knowledge is familiarity, awareness, or understanding gained through experience or study (Wang & Noe, 2010).

Generally, knowledge is divided into two different types: explicit and tacit knowledge. Explicit knowledge is knowledge that is codified and transferable into formal, systematic methods, such as in rules and procedures. Tacit knowledge, on the other hand, is knowledge learned through experience and is difficult to articulate, formalize, and communicate (Nonaka & Takeuchi, 1995; Polanyi, 1962, 1966 ref. Matusik & Hill, 1998). The dominant conceptualized view in knowledge management theories have remarked that tacit knowledge might be of little advantage for the organization if it is not shared among other members of the organization (Nonaka & Takeuchi 1995). Explicit knowledge can be easily shared and communicated and is thus easier for managers to facilitate. Tacit knowledge is more difficult to share, as it is "highly personal and therefore difficult to communicate to others" (Nonaka, 2007, p. 165).

We can also distinguish between general and firm-specific knowledge, which is of particular relevance when employing external workers. The firm-specific knowledge can be a source of competitive advantage and includes a firm's unique routines, processes, documentations, or trade secrets. This type of knowledge is to be kept within the firm and not made available to external workers at the risk of losing a competitive advantage. On the contrary, general, or public knowledge resides in the external environment and is a public good, such as industry and occupational best practices (Matusik & Hill, 1998). External workers are a source of public knowledge, of which the client firm should seek to integrate in order to stimulate the creation of new private firm-specific knowledge (Matusik & Hill, 1998). External workers can thus be a resource for creating new competitive advantages within the firm.

2.2.1 Concept of Knowledge Sharing

To achieve any competitive advantage from human resources, it is essential that knowledge is shared and retained within the firm. Therefore, knowledge sharing processes is perceived to be the most essential process for knowledge management (Bock & Kim, 2002 ref. Shih, 2006); it is a key process in translating individual learning into organizational capability

(Frey and Oberholzer-Gee, 1997; Nahapiet and Ghoshal, 1998 ref. Lam & Lambermont-Ford, 2010).

Knowledge sharing is defined as "the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures" (Wang & Noe, 2010, p.117). It is "the process by which knowledge held by an individual is converted into a form that can be understood, absorbed, and used by other individuals" (Ipe, 2003, p. 341). It differs from 'knowledge transfer' in the sense that knowledge transfer is typically the movement of knowledge between units, division, or organizations rather than individuals. The focus of this research is on the individuals' knowledge sharing behavior.

Knowledge sharing is basically the act of making knowledge available to others within the organization. Because of the potential benefits that can be realized from knowledge sharing, many organizations have invested considerable time and money into knowledge management initiatives (Wang & Noe, 2010). Previous research has shown that knowledge sharing is "positively related to reductions in production costs, faster completion of new product development projects, team performance, firm innovation capabilities and firm performance including sales growth and revenue from new products and services" (Wang & Noe, 2010, p. 115). Thus, unless individual knowledge is shared with other individuals and groups, the knowledge is likely to have limited impact on organizational effectiveness. Therefore, more and more organizations are attempting to set up knowledge management systems and practices to more effectively use the knowledge they have (Ipe, 2003). Wang & Noe (2010, p. 115) emphasize "knowledge sharing is the fundamental means through which employees can contribute to knowledge application, innovation, and ultimately the competitive advantage of the organization". However, lack of consideration to how the individual characteristics influence knowledge sharing proves an important reason to why knowledge management processes fail (Ipe, 2003; Wang & Noe, 2010). Knowledge may be exploited only if workers decide to part with their knowledge on a voluntary basis (Hislop, 2009).

Concept of Knowledge sharing behavior

According to van den Hoff and de Ridder's (2004) explanation, knowledge sharing can be divided into two separate behaviors: donating and collecting knowledge. Knowledge donating involves "communicating one's personal intellectual capital to others", while

knowledge collecting is “consulting others to get them to share their intellectual capital” (de Vrie et al., 2010, p.116). These are two distinct processes, either communicating to other what one knows, or actively consulting others in order to gain their knowledge (van den Hoff & de Ridder, 2004).

A central barrier to knowledge sharing is the individuals’ willingness to share and integrate their knowledge (Lam & Lambermont-Ford, 2010). Willingness is “the extent to which an individual is prepared to grant other group members access to his or her individual intellectual capital” (de Vries et al., 2010, p.117). People, who are willing to share their knowledge, expect others to contribute as well (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). Therefore, they seek to attain a balance between donating and collecting knowledge. A number of factors have been identified to affect knowledge sharing behavior, ranging from ‘tangible’ issues such as technological tools and communication systems, to the more ‘intangible’ factors such as an organization’s culture (van den Hoff & de Ridder, 2004). This research focuses on the ‘intangible’ factors related to an individual’s relationship with the organization.

2.3 Factors That Influence Knowledge Sharing Behavior

In seeking to determine what enhances an employee’s knowledge-sharing behavior the following section considers both individual motivations as well as factors associated with the individual’s relationship with the organization. These factors are described and furthermore explained why they are anticipated to be perceived differently from a permanent employee to an external worker. For instance, the degree to which an employee perceives organizational support may differ whether he or she has a permanent contract or an external consulting contract. Thus, in the following section, the independent variable in this research, work contract, is first explained and the main hypothesis for this research is introduced. Furthermore, hypotheses regarding the mediating factors that can be expected to influence knowledge-sharing behavior are introduced and explained.

2.3.1 Contract with the Organization

Past research on knowledge sharing has been conducted mainly on standard work relations. Theories used to explain external workers’ behavior, are therefore based on existing theories originally proposed for standard, permanent, workers in a two-party relationship. The theory

and hypotheses in this study are based on the same literature, but results are not expected to be the same as employment contract can be expected to influence an employee's attitudes and behavior (Guest, 2004; Nesheim & Olsen, 2011).

Thus, the main hypothesis for this research is:

H1*: External consultants are more reluctant to share knowledge than permanent employees.*

A question this research therefore poses is; *why* would external consultants engage in knowledge sharing to a lesser extent than permanent employees? What are the differences between these two work groups that could result in different behaviors?

First of all, the same incentives are not in place for external workers to share knowledge as the internal workers. Their contract with the client organization is usually short term (6 months- 2 years) and therefore it is reasonable to assume that they do not have any expectation of benefits such as job security, status, or promotional aspects. In situations characterized by uncertainties or insecurities, willingness to share knowledge is reduced (Ipe 2003). The external workers' short-term contract affects the time they have to become integrated in the organization and develop trust and relationships. Permanent workers, on the other hand, have a stronger expectation of future reciprocity, generally have a stronger connection to the organization and its goals, and are therefore more likely see the benefits of sharing knowledge.

Secondly, in organizations in which an individual's knowledge becomes his or her primary source of value to the firm, sharing this knowledge might potentially result in diminishing the value of the individual, creating a reluctance to engage in knowledge-sharing activities (Alvesson, 1993; Empson, 2001 ref. Ipe, 2003). Accordingly, Nesheim, Fahle, and Tobiassen (2009) found in their study that external consultants tend to protect their knowledge in order to strengthen their competitive position. The knowledge possessed by the consultant is his competitive advantage in the market place for consultants. They may therefore tend to protect their knowledge if they believe that their value to the firm is the knowledge they possess, and sharing knowledge hereby becomes a cost for them. If the client firm acquires their knowledge, it may have little need for their services in the future (Jackson et. al, 2003; Ipe, 2003).

However, different variables may influence the worker's relationship with the organization diminishing the effect of employment contract. If, for instance, the organization is successful in integrating the external worker, demonstrating trust and support, this could mediate the effect of the external worker's short-term contract. The following section will elaborate on these variables. This research divides mediating variables into two groups: 1) social mechanisms, and 2) individual mechanisms. Social mechanisms include: organizational support, organizational commitment, integration, and trust. Individual mechanisms are the individuals' motivation, job autonomy, and career orientation.

2.3.2 Social Mechanisms

Social mechanisms described as having a positive influence on knowledge sharing are organizational support, integration, trust, and organizational commitment. The mediating variables in this research are factors that, if in place, can enhance individuals' willingness to share knowledge. With the uncertain time horizon that external consultants have with the client organization, these social mechanisms may not have sufficient time to develop—thereby leading to external consultants' lower willingness to share knowledge.

Organizational Support

Organizational support is often invested heavily in with the expectation that it will have a positive impact on employees' attitudes and productivity. It has been found in several studies to have a positive influence on employees' willingness to share knowledge (Wang & Noe, 2010). When management is committed to developing a knowledge-sharing culture this influences what the employees perceive as important for the organization and its goals. The lack of management support is highlighted as an obstacle to knowledge sharing (Hariharan, 2002).

Perceived organizational support intends to measure "the extent to which the organization is perceived as valuing the employee's contribution and caring about his/her welfare" (Bartol, 2009, p.234). Perceived organizational support depends on various aspects of an employee's treatment by the organization, such as the organization's reaction to the employee's mistakes, future illness, and superior performance. The organization's behavior influences the employee's expectancy that a greater effort towards meeting organizational goals will result in reward (Eisenberger, Huntington, Hutchison, & Sowa, 1986).

The underlying theory of organizational support can be found in social exchange theory (Blau, 1984), also the most commonly used theory to explain why individuals engage in knowledge sharing. According to this theory, individuals regulate their interactions with other individuals based on a self-interest analysis of the costs and benefits of such an interaction. People seek to maximize their benefits and minimize their costs when exchanging resources with others (Molm, 2001 ref. Liang, Liu & Wu, 2008). These benefits include, amongst others, future reciprocity, status, job security, and promotional prospects (Liang et al., 2008). Exact benefits are not defined before engaging in exchange, there is simply an *expectation* of reciprocity. Perceived organizational support influences the employee's expectation of reciprocity. This expectation of reciprocity can thereby help the organization promote knowledge sharing between employees and departments (Bartol et al., 2009). From this perspective, individuals will engage in knowledge sharing to maximize their benefits through reciprocation. Reciprocity can facilitate knowledge sharing if individuals see that the value-add to them depends on the extent to which they share their own knowledge with others (Hendriks, 1999; Weiss, 1999, ref. Ipe, 2003)

Permanent and external workers have a significantly different contract with the organizations; their expectations of reciprocity will thereby differ. External workers' expectations are short-term and their opportunities for reciprocity are thereby limited by their work status. "With a relatively short time horizon and the associated decrement in job security, reciprocity mechanisms may not be enabled sufficiently to lead to the desired levels of reciprocation" (Bartol et al., 2009, p. 227). Externals accordingly would not have the same perception of organizational support as permanent employees, who have a continuous relationship with the organization. However, as many enter external work arrangements with a desire of achieving a future permanent job, this may be a motivator for the external worker (Connelly & Gallagher, 2004; Gullhaugen, 2010).

A recent study comparing external consultants and regular employees found that there was no difference among their perceptions of managerial support (Vethe, 2011). Management focuses on treating the two work groups the same. However, the challenges of managing the external consultants are larger. They are more difficult to motivate since they cannot be promised any organizational reward (Vethe, 2011). Additionally, organizational support has been found to be positively associated with knowledge sharing *only* for employees who

perceived their job security to be relatively high (Bartol et al., 2009). Since external consultants do not have any job security with the client organization, it can therefore be expected that they have a lower perception of organizational support. Thus, the hypothesis:

H2: a) *Perceived organizational support is lower for external consultants than permanent employees and b) high perceived organizational support increases knowledge sharing behavior.*

Integration

The degree of integration of the external worker within the client organization was traditionally limited. They were utilized as a commodity that could be bought when necessary, efficiently used, and then thrown out (Barley & Kunda, 2004). This was clearly demonstrated by the client firm by locating the externals separately from the regulars, giving them different ID cards with limited access, and not being able to take part in social activities or training programs. They were seen as 'outsiders' and not a real member of the organization (Barely & Kunda, 2004).

The level of integration is proposed to be dependent upon the firms' reason for using external work arrangements (Connelly & Gallagher, 2004). When simply trying to minimize costs, there was no focus on integrating the external worker. However, as the external workers no longer only perform separate, simple tasks, but often work in teams alongside the permanent employees to enhance the firms' flexibility and access specialized knowledge, the degree of integration increases. Good teamwork is based on trust and communication and requires a sharing of information. To enable this, the organization needs to integrate the external workers in order to achieve a relationship between the two groups (Gabrielsen, Gran, Mostervik & Nesheim, 2007). Organizations can achieve integration of the externals by treating them as equally as possible to the permanent employees. This includes physically locating the externals together with the regular workers, thereby enhancing their interaction and possibility of sharing knowledge, in addition to inviting them to social events organized by the client firm. This gives the externals and regular workers the opportunity to interact in a less formal setting and exchange experiences. However, recent research on external workers in the oil and gas industry indicates that the externals do not feel equally integrated in the organization as the permanent employees (Gullhaugen, 2010). Gullhaugen's study shows that the externals experience that they do not receive feedback and coursing on the

same level as the permanent employees. Additionally, they are not always included in teambuilding activities. This can create tensions between the permanent employees and the external workers and reduce knowledge sharing between them. Thus, the hypothesis:

H3: *a) External consultants feel less integrated in the organization than permanent employees, and b) highly integrated workers are more willing to share knowledge.*

Organizational Commitment

Mowday, Steers & Porter (1979) define organizational commitment as "the relative strength of an individual's identification with, and involvement in a particular organization" (Mowday *et al.*, 1979, p. 226). They continue to characterize commitment by three factors: "1) a strong belief in and acceptance of the organization's goals and values; 2) a willingness to exert considerable effort on behalf of the organization; and 3) a strong desire to maintain membership in the organization". Several studies show a positive relationship between organizational commitment and knowledge sharing (Smith & McKeen, 2002; Hislop, 2002; Van den Hoff & de Ridder, 2004). "An individual who is more committed to the organization, and has more trust in both management and coworkers, is more likely to be willing to share their knowledge" (van den Hoff & de Ridder, 2004, p. 119).

The question of commitment is more complex for external consultants than for regular employees (Connelly & Gallagher, 2004). External consultants have two organizations to relate to: their formal employer and the client organization. They often have limited contact with their formal employer and their employees, and spend most of their time with the client organization. They have short-term contracts and switch working place frequently and thereby do not have the same willingness to exert any extra effort, unless they have a strong desire to continue work in this particular organization. The traditional psychological contract where job security is exchanged for loyalty is not applicable for external consultants, and many may find their job security in their competences (Nesheim, 2009). Some externals may experience a "dual commitment" – to both the client organization and their formal employer. While some may feel a primary commitment to the project they are working on (Gullhaugen, 2010). Research points to organizational support also influencing an employer's degree of organizational commitment (McClurg, 1999). Hence, organizational commitment can be

expected to be higher for permanent employees than for external consultants, due to the nature of external consultancy work. Thus, the hypothesis:

***H4**: a) Organizational commitment is lower for external consultants than permanent employees, and b) high organizational commitment increases knowledge sharing behavior.*

Trust

According to Ghoshal and Bartlett (1994), trust is a primary dimension in organizations influencing the actions of individuals. Research generally shows a positive relationship between trust and knowledge sharing (Wang & Noe, 2010). Decisions to exchange knowledge under certain conditions are based on trust, and it also facilitates learning (Ipe, 2003). Trust can be defined in many forms and separated by degree and scope. It is developed through repeated interactions with time and through the social networks that people establish (Hsu, Ju, Yen & Chang, 2006).

Several researchers separate between benevolent trust and competence trust when examining the relationship with knowledge sharing (McAllister, 1995; Levin & Cross 2004; Ko, 2010). Benevolent trust is based on emotional bonds between individuals, such as the expectation of an individual as being genuine, caring, and honest, and having integrity. On the contrary, competence trust is has to do with expecting another individual to have the abilities and professional competence (McAllister, 1995). For example, when choosing from which individual to seek advice, you will choose a person of whom you believe has the right knowledge to give you a good answer (competence trust), or a person whom you believe have your best interest at heart (benevolence trust), or perhaps both.

Both social exchange theory and social capital theory explain how trust relates to knowledge sharing. Social capital is derived from the network of relationships between individuals. Roughly, it is the "goodwill" that comes from relationships with others, and an expectation of reciprocity (Adler & Kwon, 2002). We invest in social capital because the networks of relationships we build around us are seen as a valuable resource. For any positive benefit to arise from social capital, trust has to be present. Doing a favor for someone else, you trust that at some point it will be returned.

Barriers to trust arise from perceptions that others are not contributing equally, or that they might exploit their own cooperative efforts (Kramer, ref. Ipe, 2003). Previous research

(Gran, 2007; Gullhaugen, 2010) indicates that regular workers may be skeptical to share their knowledge with the externals due to fear of losing the competitive advantage of the firm, or that the firm will become too dependent on the external workers. These doubts and suspicions may easily create a reluctance to initiate exchanges with others or respond to others' invitations to participate in cooperative exchanges, such as knowledge sharing (Ipe, 2003). Most external consultants are working on short-term contracts and thus do not have the time to develop close ties with the client organization. According to Connelly & Gallagher (2004), it is more difficult for individuals who are not 'official' members of the organization to establish their credibility and have their knowledge accepted by permanent employees. Externals can thereby be expected to have developed less trust and relationships with the client organization and its employees, and thus less willing to share knowledge.

H5*: a) External consultants experience less trust with the organization than permanent employees and b) high trust increases knowledge sharing behavior.*

2.3.3 Individual Mechanisms

In this section the individual's motivation is briefly described, along with the perception of job autonomy and future career orientation. These are factors that can be expected to influence an individual's behavior, and thus the degree to which they share knowledge. These variables are also chosen due to the expectation that they may vary depending on work contract. Hypotheses are presented along with each variable.

Motivation

Motivation "refers to internal factors that impel action and to external factors that can act as inducements to action" (Locke & Latham, 2004). Most theories regarding individuals' motivation differentiate between intrinsic and extrinsic motivation (Davenport & Prusak, 1998; Ipe, 2003; Foss, 2009; Hung et al., 2011). *Intrinsic motivation* involves doing an activity because it is in accordance with the individuals' intrinsic interests and personal values (Ryan & Deci, 2000, ref. Foss, 2009). Employees who are intrinsically motivated to engage in knowledge sharing do it because they find the activity itself interesting, enjoying, and stimulating (Foss, 2009). There is less pressure and tension when being intrinsically motivated. Several studies have found a positive association between intrinsic motivation and knowledge sharing (Nesheim et al., 2011, Foss 2009).

Extrinsic motivation involves doing an activity to attain a certain outcome. The reason for the behavior is not inherent in the activity itself, but rather in obtaining a positive, or avoiding a negative, outcome (Foss, 2009). Extrinsic rewards can be monetary incentives like bonuses or nonmonetary incentives like gifts, free dinners/trips, or praise and public recognition (Bartol & Srivastava, 2002). Individuals dominated by extrinsic motivation are more willing to share knowledge if they are rewarded to do so. This contrasts to the intrinsic motivation where the individual is motivated to perform a task because of the inherent enjoyment of performing that task (Bartol & Srivastava, 2002). Both social exchange theory and social capital theory incorporate intrinsic and extrinsic motivation to help explain knowledge-sharing behavior (Hung et al., 2011). Extrinsic motivation can be found in economic reward, reputation feedback, and reciprocity, while intrinsic motivation is found in altruism: the genuine enjoyment of helping others without expecting something in return (Hung et al., 2011).

Study by Foss (2009) found that individual motivation explains a large proportion of knowledge sharing behavior. Much of it was closely related to intrinsic motivation, while extrinsic motivation did not have a positive effect on knowledge sharing behavior. Some researchers also argue that in the long run, unless knowledge-sharing activities help employees meet their own goals, tangible rewards alone will not help to sustain the system (O'Dell & Grayson, 1998 ref. Ipe, 2003). However, these studies have been applied to standard workers. When looking at external consultants their motivation may be different. According to Barely and Kunda's (2004) study of external consultants, many seek external consultancy work primarily because of an expectation of making more money. If they, in addition, regard their knowledge as highly valuable, stronger incentives for knowledge sharing may be necessary for external consultants than permanent employees.

H6: *a) External consultants are less intrinsically motivated than permanent employees, and b) more extrinsically motivated, and c) intrinsic motivation has a positive effect on knowledge sharing behavior.*

Job Autonomy

Autonomy is "the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out" (Hackman & Old- ham, 1976, p. 258, ref. Foss, 2009, p.873). Having a feeling of autonomy in the work one does has been linked to acting more proactively and

taking more initiative as one feels more responsible for the task or project. ‘Freedom to choose’ may have a large impact on individuals’ motivation and thus their behavior. It is widely established to particularly influence intrinsic motivation, which in turn positively influences knowledge sharing (Foss, 2009).

Job autonomy has received little attention in nonstandard employment research; however, based on characteristics of how the work is organized, permanent employees are likely to experience more job autonomy in their work than external consultants. The client organization controls the work of the external consultant; they have specific tasks they want them to perform, and controls that this particular work is carried out. In addition, external workers are seldom hired to engage in a manager position, positions which generally are characterized by more freedom to control what, when, and how the work is performed. Thus, the hypothesis:

H7: *a) External consultants experience less job autonomy than permanent employees, b) high job autonomy increases knowledge sharing behavior.*

Career Orientation

Finally, an individuals’ career orientation may also have an impact on the value they place on knowledge sharing. Careers are no longer dependent on the traditional organizational career arrangements where one can only succeed in the organization through long-term commitment. Careers are also developed outside of these traditional organizational boundaries, through interaction with different employees, gaining experience on different projects, organizations, and industries. External consultants, in particular, can build a career from the chain of projects that they work on in multiple firms. If they manage to accumulate general skills valued by organizations they can increase their value in the marketplace (Marler, Barringer, & Milkovich, 2002). The expertise and experience they build up thereby become their valuable competitive advantage when seeking new jobs. These kind of external workers adopt a ‘boundary-less’ career path, independent from the traditional organization, and rather based on their own accumulation of skills (Marler, Barringer, & Milkovich, 2002).

Awareness about the employees’ career orientation, whether it is towards the organization or outside, can facilitate recruitment of the right employees, how to manage them, and additionally align the employees’ goals with the organization’s goals. A permanent

employee has a long-term relationship with the organization and is likely to see the prospects of future benefits within the organization. This would make them more eager to seek new information, establish relationships, and share experiences and knowledge with their colleagues. In addition, making mistakes becomes less risky when you have job security. If they are career oriented towards the organization they work for and the opportunities the organization offers, this will enhance their willingness to share knowledge. External consultants, on the other hand, can be classified into two distinct groups: 1) those that have a career orientation within the client organization, and 2) those that pursue a 'boundary-less' career based on their employability (Marler, Barringer, & Milkovich, 2002).

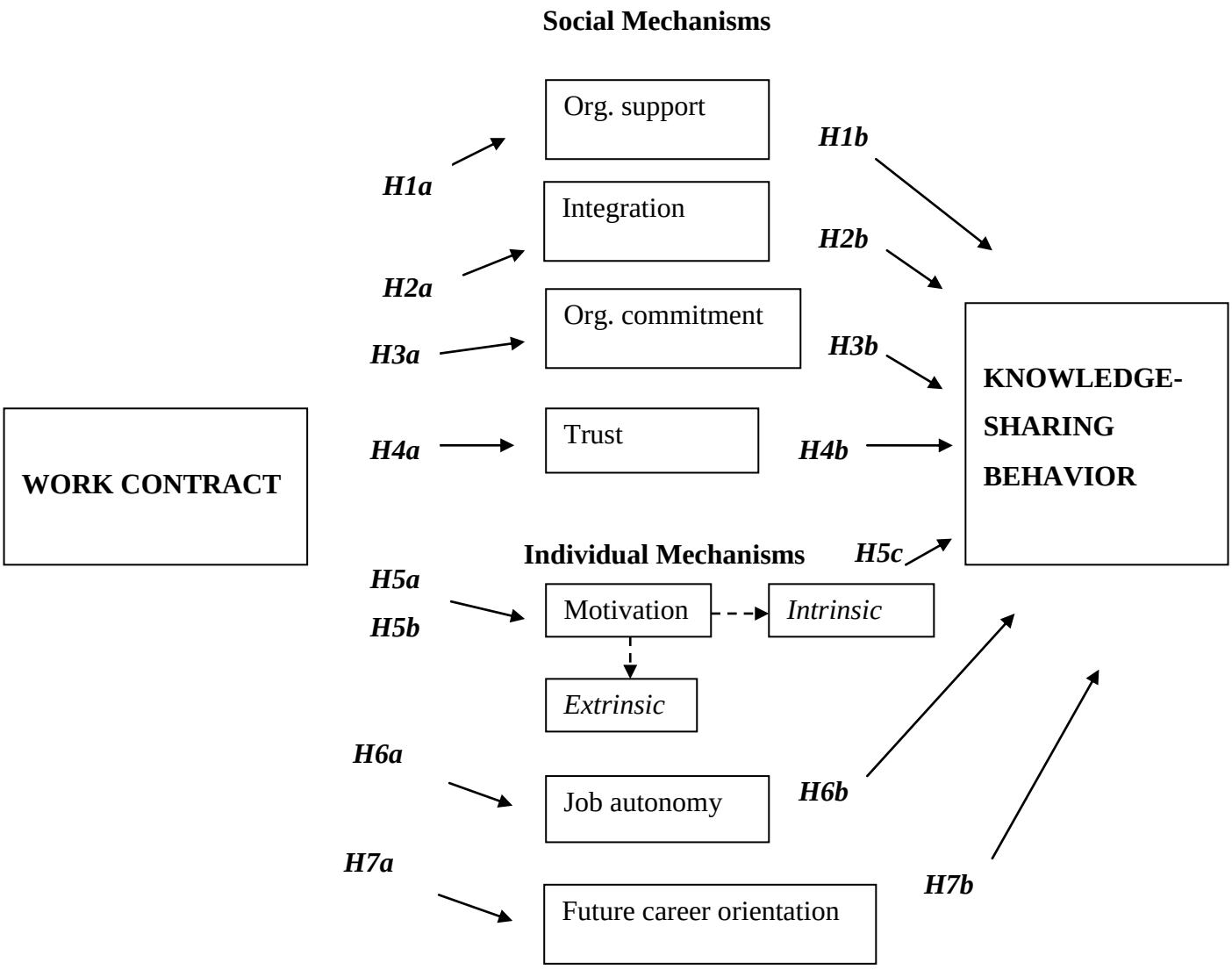
This variable is closely linked with employees' motives for choosing external work arrangement. For those external (and permanent) workers who wish to pursue a career within the client organization, it would be in their interest to demonstrate their competence to enhance their chances of further opportunities (i.e. permanent position or promotion) within the organization. They are thereby also eager to seek new information, while demonstrating their usefulness to the company. On the contrary, the 'boundary-less' worker, with a career orientation towards the opportunities outside of the current organization they are working for, will have different incentives with regards to their attitudes and behavior. Since their orientation is short-term, knowledge sharing may be perceived as involving a lot of time and effort without much in return.

H8: *a) External consultants have a more external career orientation than permanent employees and b) a career orientation towards the organization increases knowledge sharing behavior.*

2.4 Theoretical Model

Based on the theory presented above, a research model is devised. In this model, work contract is the independent model; knowledge sharing behavior is the dependent, and social and individual mechanisms are mediating variables expected to influence the relationship between work contract and knowledge sharing behavior.

Figure 1: Theoretical Model



2.4.1 Summary of Hypotheses

The hypotheses that have been introduced in this chapter are summarized below. Before presenting the results of the hypotheses testing, the methodology of this research is described in Chapter 3.

Main hypothesis:

- ***H1:*** *External consultants are more reluctant to share knowledge than permanent employees.*

Mediating variables:

Organizational support

- ***H2***: a) *Perceived organizational support is lower for external consultants than permanent employees and b) high perceived organizational support increases knowledge sharing behavior.*

Integration:

- ***H3:*** *a) External consultants feel less integrated in the organization than permanent employees, and b) highly integrated workers are more willing to share knowledge.*

Organizational commitment:

- ***H4****: a) Organizational commitment is lower for external consultants than permanent employees, and b) high organizational commitment increases knowledge sharing behavior.*

Trust*:*

- ***H5****: a) External consultants experience less trust with the organization than permanent employees and b) high trust increases knowledge sharing behavior.*

Motivation*:*

- ***H6:*** *a) External consultants are less intrinsically motivated than permanent employees, and b) more extrinsically motivated, and c) intrinsic motivation has a positive effect on knowledge sharing behavior.*

Job autonomy:

- ***H7:*** *a) External consultants experience less job autonomy than permanent employees, b) high job autonomy increases knowledge sharing behavior.*

Future career orientation:

- ***H8:*** *a) External consultants have a more external career orientation than permanent employees and b) a career orientation towards the organization increases knowledge sharing behavior.*

3. Chapter 3: Methodology

This chapter provides an overview of the underlying reasons for the chosen research design and structure. It discusses how the research process was conducted and how the research hypotheses were developed and tested. It also includes a description of the methods employed to analyze the data obtained from the research.

3.1 Research Design

The research design is the overall plan for how the problem statement intends to be answered. Choice of research design is dependent upon the problem statement and the objectives of the study (Saunders, Lewis, &Thornhill, 2009). The main purpose of this research is to conduct an explanatory research and show a relationship between the type of work contract and knowledge sharing behavior. Therefore, a deductive approach is taken where hypotheses are developed based on existing theory, and then an appropriate research strategy is chosen to test these hypotheses.

Based on existing theory on knowledge sharing and external work arrangements, a mediation model was designed. In this model, the dependent variable, what the study intends to measure is "knowledge sharing behavior". The independent variable, which is intended to explain differences in knowledge sharing behavior, is "work contract". The mediating variables in this model are explanatory variables that serve to clarify any relationship between the dependent and independent variables. In essence, the independent variable causes changes in the mediating variables, which in turn causes a change in the dependent variable. The mediating variables in this model are:

- Organizational support
- Integration
- Organizational commitment
- Trust
- Motivation
- Job autonomy
- Career orientation

Chosen research strategy was based upon purpose of the study, the research question, time constraints, and availability of resources.

3.2 Data Collection

A single data collection technique using a web-designed questionnaire was chosen to collect data. The reason for choosing a survey method was that much of the previous research on external work arrangements has used in-depth interviews, and as theories on knowledge sharing are well developed, this provided a strong basis for the testing of hypotheses using a survey. Furthermore, a survey allows for the collection of data from a large group of respondents and gives good control over the process. The respondents respond to the same set of questions in a predetermined order (Saunders, Lewis & Thornhill, 2009). In this research it was important that the respondents were distinguished by certain characteristics, making them appropriate respondents to the survey.

3.2.1 Population and Sample Selection

The sample selected for this research was based on the problem statement and purpose of this research. The population decided upon was the oil and gas industry in Norway. This was a natural starting point due to its growing use of external consultants, and the dynamic market conditions that require them to evolve and innovate, making knowledge sharing an important factor. Sampling the entire population in this industry is not possible, and so a sample was selected.

It was important that respondents were both regular employees with a permanent contract and employees with an external work arrangement. The most common external work contract in this industry is external consultants hired through a third party. When contacting companies, it was specified that their external workers should be hired (in part) due to their specialized skills (and not only to do administrative tasks). It is for this particular type of external consultants that knowledge sharing is increasingly relevant, and thus an interesting sample for this study.

Primarily, the large actors in the oil industry were contacted, as these organizations would be able to provide a large enough sample. Furthermore, the study is only relevant to those organizations where their permanent employees and external consultants interact on a daily

basis. This reduced the amount of organizations in the industry that would be relevant to contact. In order to gain access to organizations in this industry, a total of 27 organizations were contacted by email requesting them to participate in a survey regarding permanent and external workers, and knowledge sharing. To increase the chances of getting a positive response and having a representative number of external consultants responding to the survey, smaller professional consultancy companies that lease their employees to the larger oil companies were also contacted. After two months, one of the larger subsea organizations agreed to participate. In addition, two smaller consultancy companies also agreed to distribute the survey to their employees working as external consultants. The companies have chosen to remain anonymous, but a short description is included below.

Large Subsea Organization within the Oil and Gas Industry

A large organization delivering subsea solutions to the oil and gas industry is the main respondent in this research. It operates within engineering and offshore subsea activities and has several thousand employees throughout the world. The survey was sent out to three of their departments in Norway: HSEQ (Health, Safety, Environment, and Quality) department, Project and Services, and SCM (Supply Chain Management) department. The SCM department is the largest department and also has a majority of external consultants. The other two departments are slightly smaller and have a smaller share of external consultants. The survey was designed before knowing which departments it would be sent out to and therefore any difference in departments has not been taken into account. However, it does increase the generalizability, since respondents are not from one particular department in the organization.

This organization employs a relatively large share of external consultants – almost 28% of the sample from this organization is external consultants. Integrating the external consultants is of particular emphasis in this organization. Management focuses on treating them equal to the permanent employees and making them feel as a part of the organization.

Professional Consultancy Organizations within the oil and gas industry

The two smaller companies that agreed to participate both hire out consultants in their field of specialization. One of the companies specializes in the supply of documentation and training, and the other in logistical solutions. Both companies operate within the oil and gas industry and their employees have a broad area of experience. By including these companies

in the study, the findings of the external consultants are more representative and generalizable for this industry.

3.2.2 Survey design

The survey was designed using Qualtrics, an online survey software tool. The survey consists of a total of 18 questions, 6 of which are set up as matrix questions. These matrix questions represent the mediating and dependent variables, measured on interval scales, consisting of totally 33 (34 if permanent employee is selected) different statements that respondents rate their agreement with. The independent variable is a nominal variable, asking whether the respondent's current work contract is "*permanent employee*" or "*external consultant*". Depending on their answer here, the respondent is sent to the specific set of questions for their type of work contract. The questions are almost identical except for making explicit that the questions for the external consultant refer to the client organization rather than their formal employer. For instance, permanent employees are asked about the duration of their contract with the organization, while external consultants are asked about the duration of the contract with the *client* organization. External consultants are also asked to rate their main reasons for choosing external consultancy work.

The mediating and dependent variables in the research model are measured using a scale, "a coherent set of questions or items that are regarded as indicators of a construct or concept" (Corbetta, 2003, ref. Saunders et al. 2009, p.378). The constructs are thoroughly explained in section *3.4.1 Measurements*. The questions use the Likert-style rating scale to indicate respondents' agreement or disagreement on a five-point rating scale, which was coded accordingly. For negatively loaded questions the scores were reversed. Two different types of response categories were used depending on the type of question:

Agreement:	To what extent…:
• Strongly Agree = 5	Large extent = 5
• Agree = 4	Moderate extent = 4
• Neither agree nor disagree = 3	Neutral = 3
• Disagree = 2	Somewhat extent = 2
• Strongly Disagree = 1	Little extent = 1

The survey was primarily designed in English, but in order to maximize response rates it was also made available in Norwegian. This was to make it easy for all respondents to take the survey. The oil industry in Norway has a lot of international workers, but Norwegian native speakers in general prefer, and feel more comfortable with, their own language. The complete survey, in both languages may be found in the appendix.

In addition, the layout of the survey was kept simple and professional, using the NHH layout, which consistently reminds the respondents of the nature of the research and its academic purpose. The front page of the survey included a short introduction of the purpose of the research, its anonymity, and estimated time to complete the survey. This was a shorter version of the introductory email including all necessary information for the respondents prior to taking the survey. All these aspects of the survey enhance the reliability and validity of the data. The complete survey may be found in Appendix A.

3.3 Reliability and Validity

A valid questionnaire enables accurate data to be collected, and to be reliable means that the data are collected consistently. In other words, while reliability refers to producing consistent findings at different times and under different conditions, validity refers to whether the findings are really about what they appear to be about (Saunders et al., 2009).

When using a survey, internal validity is essential to make sure the constructs actually measure what they intend to measure. Assessing internal validity means making sure that there are no alternative explanations for our findings (Saunders et al., 2009). The concepts that are measured should thereby be thoroughly grounded in theory, clearly representing the theoretical framework of the intended study. In this study the majority of the constructs have been adapted from previous studies, which ensures a high validity. Two constructs, "integration" and "future career orientation" were created based on theory and literature review of previous research in this area.

For a questionnaire to be valid, it must also be reliable (Saunders et al., 2009). A common approach to assessing reliability is measuring internal consistency using Cronbach's alpha. This measures the consistency of responses across the questions in the survey by measuring how well the items as a group are a prediction of the underlying concept. A high Cronbach's alpha is necessary to ensure reliability. A reliability coefficient of above 0.7 is considered

acceptable values. Variables with values below this should be treated with caution (Sannes, 2004).

With a web-based survey, the researcher is not in direct contact with any of the participants thereby securing their anonymity. All participants were sent an email concerning the anonymity and confidentiality of the data. None of the answers can be traced back to individuals. Ensuring participants' anonymity is important to enhance participation and truthful answers. It was also specified that participation was completely voluntary and that they may at any time end the survey. These aspects are important for an ethical administration of the survey and enhance the trust of participants towards the research project, thus securing reliability of the data.

Prior to sending out the survey, a pilot test was undertaken. The purpose of a pilot test is to refine the questions so that respondents have no problem answering the questions and that any mistakes can be corrected before the final survey is sent out. The advantage of this is that one can obtain some assessment of the questions' validity and likely reliability (Saunders et al., 2009). Pilot testing was done on some permanent employees in the oil industry and a couple of which had worked as external consultants. The feedback from this pilot testing was valuable for editing and ensuring face validity. Since the organizations that were willing to participate in the survey had been assured that it would not require much of their time, maximum 5-10 minutes to complete, it was important to check that this time estimate was accurate. Furthermore, feedback on the clarity and wording of the questions, the flow of the survey, and its layout enhances the validity of the final survey.

Generalizability is the extent to which the findings of this study are applicable to other settings (Saunders et al., 2009). All permanent employees in this study are represented by one organization, which limits their findings to other organizations. External consultants, on the other hand, are represented by several organizations. A proportion is working for the large subsea organization, but in order to avoid under-representing external consultants in this study, the survey was sent out to external consultants working for various client organizations. This undoubtedly raises the generalizability of the findings concerning external consultants to be valid in other organizations, too, in the oil and gas industry.

A couple factors should be pointed out that could reduce the study's reliability and generalizability. Firstly, the researcher does not have complete control over which type of

external consultants have received the survey, whether they have a permanent contract with their formal employer or if they hired on a project to project basis. Second, there is the risk of respondent bias reducing overall validity if respondents are answering what they think they "should" be answering, rather than actual behavior.

Response Rates

The survey was sent out to a total population of 323 possible respondents. Of these, 268 were from the large subsea company, and 55 from the two smaller consulting companies. After four weeks of collecting data, 138 responses had been registered. This is a response rate of 43% from the specified population, and an acceptable rate. It is a sufficient number of responses to make statistical analyses possible.

There is almost no difference in response rates between permanent and external workers within the large subsea company, indicating no nonresponse bias between these two groups. Response rate from the external consulting companies was slightly higher which presumably is due to the smaller size of the companies, and the encouragement to respond coming directly from their management director. Two reminders were sent out to enhance response rates, one after the initial week, and a second after three weeks.

Table 1: Response rates

	# sent out	# responded	Response Rate
Subsea company (total)	268	112	42%
Permanent employees	*194*	*80*	*41%*
External consultants	*74*	*32*	*43%*
Consulting companies	55	26	47%
TOTAL	**323**	**138**	**43%**

3.4 Data Analysis

This section introduces the methods and measurements used to collect and analyze the data, and describes the statistical techniques used for analysis. A quantitative data analysis was conducted using the statistical analysis program SPSS.

3.4.1 Measurements

The measurement process for quantitative research follows the sequence of first conceptualizing then operationalizing, followed by measuring, in order to collect data (Neuman, 2000). The concepts that are used in this study are operationalized by converting definitions of the variables and making use of measure that have been validated in previous research (Martins & Meyer, 2011).

Independent Variable:

The independent variable in the research model is "work contract". To simplify the model, only two alternative responses were given:

- Permanent employee
- External consultant

The decision to eliminate other types of work arrangements such as temporary employment, or independent contracting, was due to the purpose of this research and to simplify the model. The objective of the research is to examine external consultants hired through a third party, and literature review and hypotheses are developed with this focus. There is the risk of sending the survey to respondents who do not feel like they fall within either of these two response alternatives. Additionally, different types of external consultant contracts are not accounted for. To measure differences across the independent variable, duration of the work contract is controlled for, and external consultants are asked to rank their top 'reasons for working as an external consultant'.

Dependent variable:

The dependent variable in the research model is "knowledge sharing behavior". Knowledge sharing behavior was measured using the following indicators:

To what extent do you…
... receive knowledge from colleagues in the same department as you?
... receive knowledge from other departments in the organization?
... share your opinions, ideas, and expertise with your colleagues?
... share your opinions, ideas, and expertise with other departments in the organization?
... perceive sharing knowledge as part of your job?
... seek professional advice from your colleagues?
... have enough time to share knowledge with your colleagues?
... share knowledge and expect the favor to be returned to you in the future?

Knowledge sharing is measured using a combination of indicators used in other studies (Foss, 2009; Nesheim, et al., 2011), as well as indicators that were adapted to fit the purpose of this study and the theoretical background for the hypotheses. The concept of knowledge sharing includes the respondent both receiving and sending knowledge. The items intend to capture this, and knowledge sharing between and within departments. In addition, items such as time and regards to future reciprocity are included in this measurement.

Mediating variables:

The mediating variables in the theoretical model were operationalized and measured mostly by using measures adapted and validated by previous researchers. Three organizational support items were adapted from Eisenberger and Huntington's (1986) survey of Perceived Organizational Support. The three statements from this survey were chosen based on their relevance to the theoretical background for this research. Organizational commitment measurement was adapted from the Mowday, Porter and Steers (1982) 9-item measure of organizational commitment (four items were used). All measures were revised slightly for external consultants to make explicit that the questions referred to the client organization rather than their formal employer, the hiring agency.

The integration construct had to be developed, as there was not found any previously validated constructs for measuring integration. The following items were developed for integration, based on the literature review, and in-depth interviews done in earlier research (Gabrielsen, Gran, Mostervik, & Nesheim, 2004; Torgan, 2010):

- In general, I feel included and as a part of this organization.
- I take part in any relevant project meetings.
- I have access to any relevant courses or seminars.
- I receive feedback from my superior on my job performance.

Trust items were adapted from Levin & Cross (2004) based on McAllister's (1995) research on trust measures. Measures for job autonomy and motivation were adapted from Foss (2009). Future career orientation items are based on examination of literature and in-depth interviews done in previous research (Gullhaugen, 2010). Seven items (3 for external consultants, 4 for permanent workers) were developed to measure future career orientation. All items use a five-point Likert-rating scale to determine the relative intensity of the different items.

Control variables included were age, gender, educational background, and years of work experience.

3.4.2 Statistical Techniques

The following statistical techniques were used to answer the research question and test the hypotheses of this study.

Step one: Descriptive statistics provides an overview of the respondents' answers, the frequencies and whether the dataset has a normal distribution. General comparisons can be made based on the demographic characteristics of the respondents.

Step two: Factor analysis is a method of data reduction, which "attempts to identify underlying variables, or factors, that explain the pattern of correlations within a set of observed variables." (SPSS). To test whether the dataset is suitable for factor analysis, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test is conducted. Then the factor analysis is used to create indexes of variables that, conceptually, measure similar things. Factor analysis can be either exploratory or confirmatory (DeCoster, 1998). As the hypotheses in this thesis is based upon a theoretical model, dimensions are already pre-defined and most concepts are re-used from previous research, this factor analysis is confirmatory. It attempts to verify the structure and number of dimensions in the theoretical model (DeCoster, 1998).

After the factor analysis, indexes are created as measurements of the pre-defined constructs. This is part of the data preparation, in order to perform the ensuing statistical tests. The goal is that the factor analysis does not deviate much from the initial model so the theoretical model can be retained.

Step three: Correlation tests were first run between indicators of the same variable to test internal consistency of the indexes. Furthermore, Cronbach's alpha was used to determine whether the indexes were reliable enough for analysis.

Secondly, correlation tests were run between the independent variables, as a high correlation between them would indicate multicollinearity. When this occurs, the multiple regression with all the independent variables may yield a significant p-value, however, the individual variables may not be significant if they are highly correlated. Neither variable then contribute significantly to the model, but together they are significant. This is important to be aware of when the regression tests are performed (Sannes, 2004).

Finally, the Pearson correlation coefficients were calculated between the independent variable, the mediating variables and the dependent variable. High correlation between these variables is desirable as this indicates support for causal connection and the existence of a relationship between the variables (Sannes, 2004).

Step four: The independent samples t-test was conducted to compare the difference in the means of the two groups – permanent and external workers (Saunders et al., 2009).

Step five: Regression analysis was used to test the hypotheses of the study. Regression analysis determines the importance of each variable and its contribution to the model by explaining how the independent variable influences the dependent variable (Saunders et al., 2009). In regression analysis any significant relationship can be controlled for with control variables and dummy variables. Standard bivariate regression was first carried out on the dependent and independent variable. Multiple regression analysis was next performed including all variables, mediating and control variables, in the model. Stepwise regression was also included in order to determine each variable's individual contribution to the model. Each hypothesis was tested individually using the mediating variables as dependent variables to test for differences in work contract.

4. Chapter 4: Results

This chapter provides an overview of the results from the statistical analyses using SPSS. Characteristics of the dataset are first described using descriptive statistics. Next, the results of the factor analysis are presented. After the factor analysis, indexes were created to measure each variable and then correlation and regression tests were performed. A summary of the findings from these tests is produced at the end of this chapter.

4.1 Descriptive Statistics

Descriptive statistics are used to describe the characteristics of the sample. Frequencies provide an overview of how many respondents gave that particular answer. This is used when exploring the demographic characteristics of the sample, which are also used as control variables in further analysis. Frequencies are also used in describing the characteristic of the independent variable since it is a nominal variable. Descriptive statistics of the mediating and the dependent variable, being continuous variables, include measures of the mean, range, and standard deviation.

Descriptive statistics are also used to describe the distribution of the dataset. Whether the dataset is normally distributed affects the choice of statistical methods. Descriptive statistics provides values for ‘skewness’ and ‘kurtosis’ which show how the respondents’ answers are distributed along the scale and gives an indication if the data is normally distributed. Significant high values in skewness and kurtosis indicate that the data is not normally distributed. Values should be close to 0, and values above 2 indicate a non-normal distribution (Sannes, 2004). Values for skewness and kurtosis depict a normal distribution among all variables except “knowledge sharing behavior” and “trust” (see Appendix B). Since most variables appear to be normally distributed and it is not a requirement for further analysis to transform the data, normal distribution is assumed and statistical tests will be carried out with this assumption.

Demographic characteristics

Table 2 below shows the proportion of males and females in the sample, which age category the majority of the respondents belong to, and their education. The majority of the respondents are male which is as expected for this particular industry. The oil and gas

industry in Norway is dominated by male workers as they have a greater tendency than women to take an engineering education (regjeringen.no, 2012). The majority of the respondents have a higher education, either a bachelors or masters degree. Most respondents of the category "other" also specified a type of education equivalent of a bachelors or masters degree. These variables are used as control variables in the regression analyses.

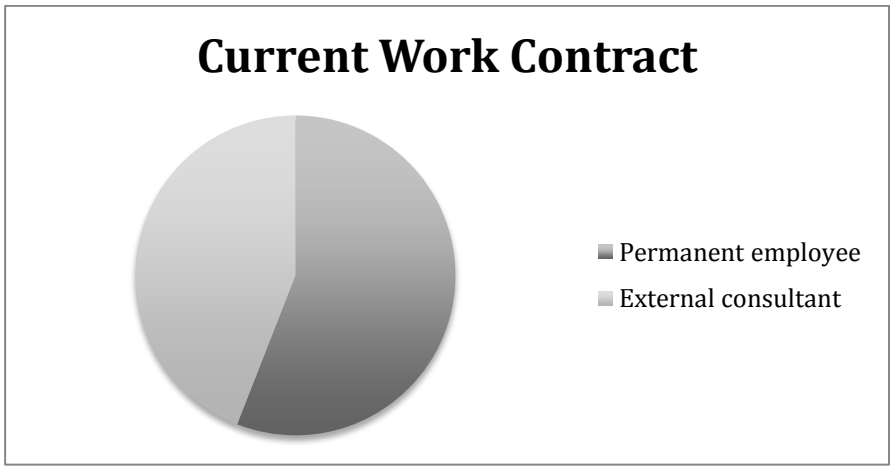
Table 2: Sample characteristics

Sample characteristics	Percentage
GENDER	
Male	60%
Female	40%
AGE	
below 30	23%
between 31-40	35%
between 41-50	23%
between 51-60	13%
above 60	6%
EDUCATION	
High school or below	24%
Bachelors degree	29%
Masters/MBA degree or higher	29%
Other	18%

Independent variable

The independent variable is a nominal variable with two different options to choose from, either "permanent employee" or "external consultant". The majority of respondents are permanent employees, 58% (see Figure 2 below). This is as expected as 28% of those the survey was sent out to in the larger subsea company were external consultants. The increased share of respondents being external consultants (42%) are from the two external consulting companies. 50% of the respondents with an external consulting contract work for the large subsea company, 42% work for other companies, while 8% did not respond to which client company they work for. The non-respondents are not included in further analysis.

Figure 2: Current Work Contract



Information regarding length of the respondent's current work contract was also obtained by asking how many years they had been employed by the organization. As can be seen in Figure 3 below, majority of the permanent employee respondents had been employed for less than 1 year. For external consultants, the most frequent duration of their current client contract was 6-12 months (see Figure 4).

External consultants were also asked to rank their top reasons for working as an external consultant. The most important reasons appear to be to "increase their skills and knowledge" and the "higher pay and flexibility" that comes with a job as an external consultant (see table 3 below). Interestingly, the reason that was ranked number one the most times was undoubtedly the "higher pay and flexibility". This is an important question that can be used in explaining reasons behind external consultants' attitudes and behavior. Furthermore, it reveals differences *within* external consultants and can be used in further analysis.

Table 3: Motivation for external consultant work

Top reasons for working as an external consultant	#1 reason	Total responses
Increase my skills and knowledge.	9	43
Higher pay and more flexibility.	18	40
To work on more new and challenging projects.	8	38
Possibility of future permanent contract with the client organization.	10	27
Makes the job searching process easier.	4	17
Not sure with regards to future choice of career and this is a way to try out different options.	4	15

Figure 3: Years of Employment (permanent employees in large subsea organization)

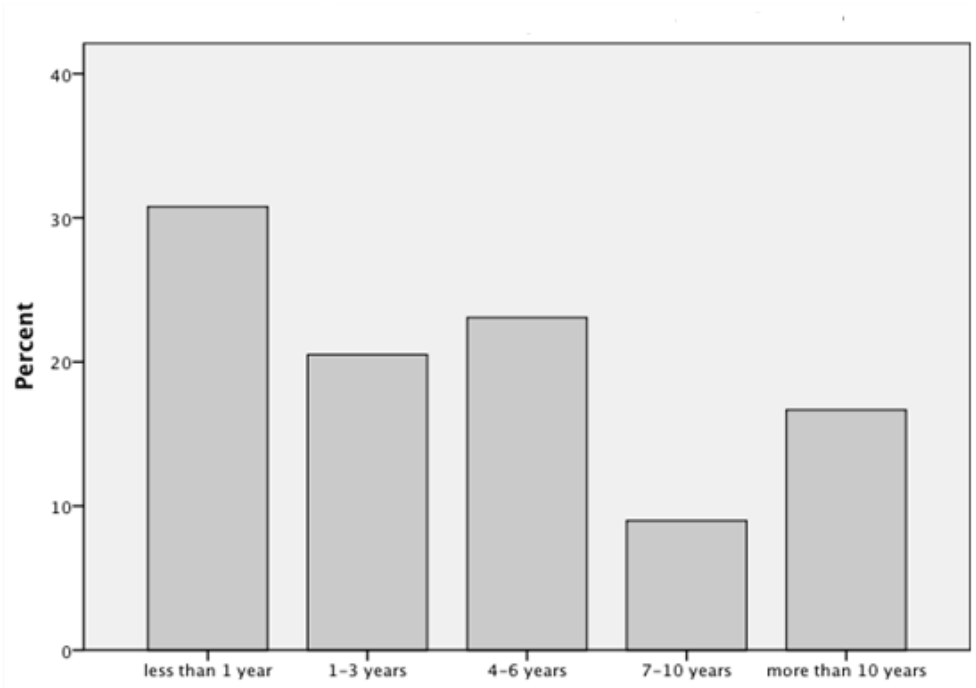


Figure 4: Duration of External Work Contract

4.2 Factor Analysis

The basic objectives of a factor analysis are (Qualtrics):

1. To determine how many factors are needed to explain a set of variables.
2. To find the extent to which each variable is associated with each of a set of common factors.
3. To provide interpretation to the common factors.

The factor analysis, in other words, shows the degree to which the different variables measure different things, indicating that the variables are independent of one another and represent measures of separate variables (DeCoster, 1998). The factor analysis conducted is confirmatory. It attempts to verify the structure and number of dimensions in the theoretical model.

To test whether the dataset is suitable for factor analysis, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test is conducted (Sannes, 2004). The closer the KMO value is to 1, the better. A value of 0.6 is a suggested minimum, so this dataset with a KMO value of 0.789 is acceptable for factor analysis.

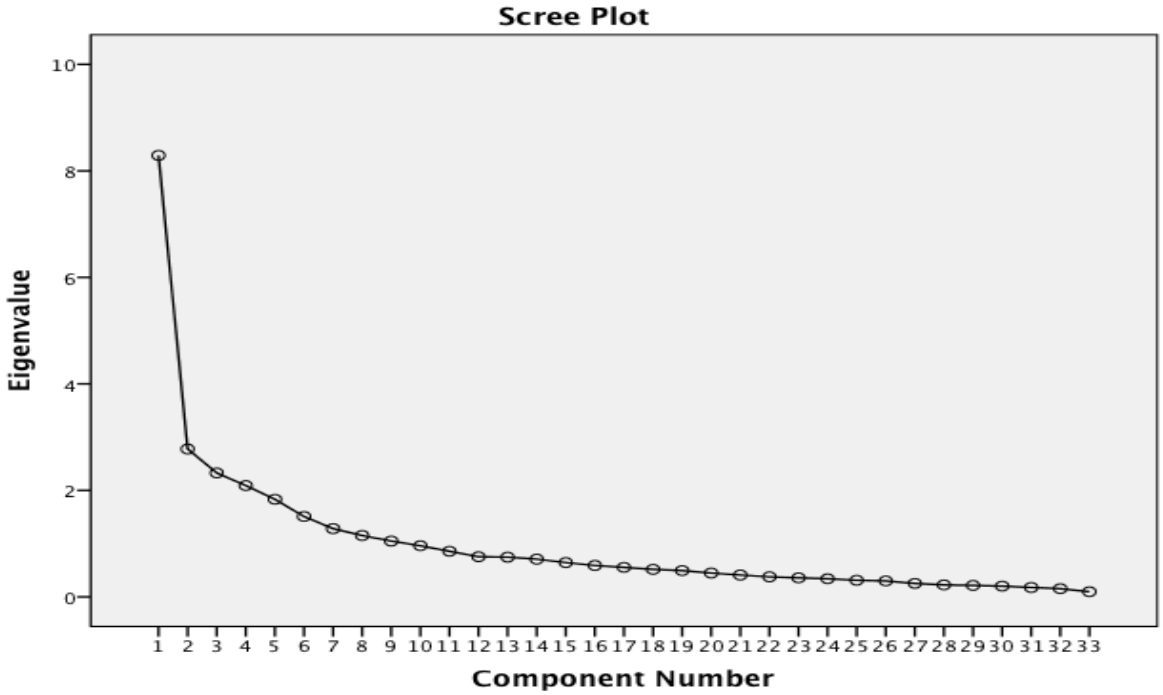
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.789**
Bartlett's Test of Sphericity	Approx. Chi-Square	**1777.793**
	df	**528**
	Sig.	**.000**

There are several different methods that can be used to conduct factor analysis, and as there is no wide agreement on which method is the best, the standard method, Principal Component Analysis, is used in this analysis. Furthermore, different methods for rotation can be chosen, either orthogonal rotation or oblique rotation. Rotation optimizes the factor structure, and choice of method depends on whether it is believed that the variables are completely independent of one another or if they can be interrelated. Orthogonal rotation imposes the restriction that variables cannot be correlated, while oblique rotation allows the variables to be correlated to one another (DeCoster, 1998). For the purpose of this analysis, oblique rotation method is chosen, as the mediating variables in this model are conceptually close and can therefore be expected to find correlations between the variables.

SPSS extracts those factors with an Eigenvalue (variance) of more than 0.1. A Scree Plot is used to verify the amount of factors extracted. The graph plots Eigenvalue against each factor, thereby based on how much variance each factor accounts for. The more factors, the less amount of variance they account for and therefore the curve tails off as the amount increases as shown in Figure 5 below.

Figure 5: Scree Plot from Factor Analysis



The factor analysis interprets 9 separate factors, one more than the initial model in this study. The analysis shows that motivation can be divided into two separate factors as intrinsic and extrinsic motivation. The factor analysis does not deviate much from the original model and as the variables are based on already established measures from previous study, the remaining factors are retained as originally intended – as long as their Cronbach's alpha value is high enough. The dependent variable, knowledge sharing behavior, was measured using 8 indicators. Based on the factor analysis and the fact that its Cronbach's alpha value would be higher if eliminating two indicators, two indicators were removed from further analysis. The following section explains how the indexes were created and checked for reliability.

4.3 Data Preparation

As some of the questions in the survey were separated for permanent employees and external consultants, these questions had to be combined into the same dataset. This was done by combining (summing) the responses from the statements of similar wording resulting in one common indicator for both permanent and external employees. The mean was then calculated on the total number of indicators for one variable, organizational support for instance, and this value was used as the index for that particular variable. In addition to using factor analysis to confirm the indicators for each of the concepts, Cronbach's alpha was tested on each index to ensure reliability of the concept. Most of the variables remained the same as the theoretical basis, while some of the variables needed adjustments before further analysis could be made. Table 4 summarizes the indexes, the number of indicators, and their Cronbach's alpha values, and their corresponding descriptive statistics.

Table 4: Reliability and descriptive statistics

Construct	# of items	Cronbach's alpha	Range	Mean	SD
Knowledge Sharing	6	0.805	1.83-5.00	4.0822	0.61
Organizational Commitment	4	0.5	2.00-5.00	3.7847	0.56
Organizational Support	3	0.816	1.00-5.00	3.7551	0.68
Integration	4	0.714	1.50-5.00	3.7607	0.69
Trust	4	0.826	1.00-5.00	3.8902	0.54
Job Autonomy	3	0.87	1.33-5.00	3.9288	0.93
Motivation	4	0.613	1.75-5.00	3.6501	0.61
intrinsic	*2*	*0.464*	*2.5-5.00*	*4.2061*	*0.64*
extrinsic	*2*	*0.741*	*1.00-5.00*	*3.0878*	*0.9*
Future career orientation		*0.453*			
external consultants	*3*	*0.949*	*1.00-4.67*	*3.2164*	*0.8*
permanent workers	*4*	*0.967*	*2.00-5.00*	*3.7295*	*0.54*

Dependent variable – "knowledge sharing behavior"

"Knowledge sharing behavior" was initially measured with eight different indicators. Cronbach's alpha of this concept was 0.781, an acceptable value. However, removal of two indicators: *"to what extent do you…have enough time to share knowledge with your colleagues*" and *"…share knowledge and expect the favor to be returned to you in the future"* would result in a higher Cronbach's alpha. These two indicators also showed a lower correlation with the other indicators of this concept, while the remaining six indicators

showed a significant positive correlation between all six indicators. In the factor analysis these two indicators were also in a separate factor than the other indicators. Therefore it was decided to remove these two indicators from further analysis. See Appendix C for correlation matrix.

Mediating variable – "Motivation"

This variable was measured using four different indicators, two representing intrinsic motivation and two for extrinsic motivation. Cronbach's alpha of this variable is 0.613. This is a slightly lower alpha value than what is desirable. When dividing the concept into intrinsic and extrinsic motivation then Cronbach's alpha values are 0.464 for intrinsic motivation and 0.741 for extrinsic motivation. A possible explanation for the low Cronbach's alpha is that even though the measurements are adapted from a previous study (Foss, 2009), in order to ensure an acceptable length of the survey, only four out of six of the measurements in Foss' (2009) study were used.

A correlation analysis of the indicators shows a significant correlation with all indicators with exception of the intrinsic indicator *"I share knowledge because I think it is an important part of my job."* Cronbach's alpha increases to 0.639 when removing this variable. It is decided to use separate indexes for extrinsic and intrinsic motivation, however, results from the intrinsic motivation variable is interpreted with caution. See Appendix D for correlation matrix.

Mediating variable – "Organizational Commitment"

Organizational commitment was measured using four indicators. Permanent and external workers answered two different sets of statements, the only difference being that the statements for externals made explicit that they referred to the client organization. Cronbach's alpha value for these indicators *before* combing the dataset for permanent and external workers was initially very high (0.94). This is as expected since the indicators were adapted from an established, well-known measurement of organizational commitment (Mowday et al., 1982). However, after combining the data for permanent and external workers on these indicators, the new Cronbach's alpha value is 0.5. This value is generally too low to be accepted for further analysis; nonetheless, as the values are high and reliable before combining the datasets, it is chosen to proceed with the new, combined variable. Cronbach's alpha value for the other variables, which also had different wording for

permanent and external workers, also received lower Cronbach's values after combining the datasets. Apparently, some reduction in reliability occurred when combining the data.

Mediating variable – "Future career orientation"

"Future career orientation" was measured with three different indicators for external consultants, and four different indicators for permanent workers. Other than the indicator regarding job security, these indicators are different for permanent and external workers (see survey questions 18 and 19 in Appendix A). Therefore, when combining the datasets the Cronbach's alpha value is quite low (0.453). These indicators are not based on already established measures from earlier research (such as that of organizational commitment) and the indicators have different statements depending on work contract. These variables variable should therefore be analyzed as separate variables for permanent and external workers. The Cronbach's alpha without combining datasets for the two work groups is 0.94 and 0.96 – very high and reliable values. However, this creates problems for analysis when comparing across groups. As such, since the dataset cannot be combined to produce reliable measurements, the variable "future career orientation" is removed from further analysis.

The mediating variables "trust", "job autonomy", "organizational support", and "integration" all had acceptable Cronbach's alpha values, even after combining the datasets. Therefore no changes were made to these variables.

4.4 Correlation Analysis

Correlation between variables occurs when a change in one variable is accompanied by a change in another variable but causation of the change in variable is not clear (Saunders et al., 2009). It is a measure of association between two quantity variables (i.e. interval or ratio) and only tells us that variables move together in a certain way, not indicating causality. The most commonly used correlation test is the Pearson correlation, which allows us to examine relationships among interval or ratio variables (University). A correlation coefficient is determined which quantifies the strength of the relationship between the variables. This number is a value between -1 and +1. A value of +1 is a perfect positive correlation, meaning that as the value of one variable increases, value of the other variable will also increase. The opposite occurs if the correlation is negative, -1. A value of 0 indicates that the variables are perfectly independent (Saunders et al., 2009). The complete correlation matrix

between the mediating variables and the dependent variable can be found in Appendix E. Table 5 presents the correlation results.

Table 5: Correlation results

Pearson correlation coefficient	
Mediating variables	Correlation with "Knowledge Sharing Behavior"
Organizational Commitment	.471**
Organization Support	.620**
Integration	.505**
Trust	.414**
Job Autonomy	.394**
Motivation	.200*
intrinsic	.440**
extrinsic	-0.06
Note: * significant at 0.05 level; ** 0.01 level	

The correlation test shows a statistically significant positive relationship between the variables organizational commitment, organizational support, integration, trust, job autonomy, intrinsic motivation, and knowledge sharing behavior. No relationship is found between the variable extrinsic motivation and knowledge sharing behavior.

4.5 Comparing means across the independent variable

A brief look at the descriptive means of permanent employees and external consultants shows that permanent employees score slightly higher than external consultants on all variables with the exception of extrinsic motivation (see Figure 6).

Figure 6: Descriptive means

Group Statistics

	Current work contract	N	Mean	Std. Deviation	Std. Error Mean
Knowledge sharing behavior	Permanent employee of Subsea7	73	4.1324	.54271	.06352
	External consultant	58	4.0190	.68825	.09037
Org. Commitment	Permanent employee of Subsea7	74	3.8390	.56542	.06573
	External consultant	58	3.7155	.55979	.07350
Org.Support	Permanent employee of Subsea7	74	3.8559	.60962	.07087
	External consultant	58	3.6264	.73635	.09669
Integration	Permanent employee of Subsea7	74	3.8806	.59505	.06917
	External consultant	58	3.6078	.76392	.10031
Trust	Permanent employee of Subsea7	74	3.9426	.45621	.05303
	External consultant	58	3.8233	.62830	.08250
Job autonomy	Permanent employee of Subsea7	73	4.0822	.86027	.10069
	External consultant	58	3.7356	.97684	.12827
Motivation	Permanent employee of Subsea7	73	3.5982	.61321	.07177
	External consultant	58	3.7155	.60598	.07957
Intrinsic motivation	Permanent employee of Subsea7	73	4.2192	.62353	.07298
	External consultant	58	4.1897	.65446	.08593
Extrinsic motivation	Permanent employee of Subsea7	73	2.9589	.90812	.10629
	External consultant	58	3.2500	.87984	.11553

When comparing the means of two independent groups with one another we can perform an independent t-test. Even though we can see that the means between the groups are slightly different, the independent t-test tests if the difference in the means of the two groups is significant. The null hypothesis, H_0, in a t-test states that there is no significant difference between the two groups, in this case, between permanent employees and external consultants. One assumption of the t-test, in addition to normal distribution and independent groups, is approximately equal variances between the two groups. Therefore the test first reads Levene's test for Equality of Variances where the null hypothesis that variances are equal is either rejected or accepted. As we see below in Figure 7, equal variances can be assumed and we next look at the Sig. (2-tailed) value. This is the probability value (P-value) of the data and tests the significance level. A significant P-value is commonly less than 0.05 (5%). We can reject the null hypothesis when the P-value is less than 0.05 and state that there is a significant relationship. For instance, if the P-value is 0.04, we reject the null hypothesis with a 4% chance of being wrong. In this particular t-test there is a significant

difference in the means between permanent employees and external consultants on the variables integration (0.023) and job autonomy (0.033).

Figure 7: Independent t-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-		
		F	Sig.	t	df	Sig. (2-tailed)
Knowledge sharing behavior	Equal variances assumed	2.079	.152	1.055	129	.293
	Equal variances not assumed			1.027	106.628	.307
Org. Commitment	Equal variances assumed	.506	.478	1.250	130	.213
	Equal variances not assumed			1.252	123.130	.213
Org.Support	Equal variances assumed	1.186	.278	1.958	130	.052
	Equal variances not assumed			1.914	109.922	.058
Integration	Equal variances assumed	3.731	.056	2.307	130	.023
	Equal variances not assumed			2.239	105.479	.027
Trust	Equal variances assumed	2.194	.141	1.263	130	.209
	Equal variances not assumed			1.216	100.449	.227
Job autonomy	Equal variances assumed	1.713	.193	2.157	129	.033
	Equal variances not assumed			2.125	114.478	.036
Motivation	Equal variances assumed	.031	.860	-1.094	129	.276
	Equal variances not assumed			-1.095	123.016	.276
Intrinsic motivation	Equal variances assumed	.195	.659	.263	129	.793
	Equal variances not assumed			.262	119.612	.794
Extrinsic motivation	Equal variances assumed	.046	.830	-1.848	129	.067
	Equal variances not assumed			-1.854	123.999	.066

4.6 Regression Analysis

Regression analysis is used to test the hypotheses of this study. Regression tests determine the cause-and-effect relationship between the independent and dependent variables. It measures the proportion of the variation in a dependent variable that can be explained by the independent variable (Saunders et al., 2009).

When conducting a linear regression analysis, certain assumptions must be checked. Items such as outliers are identified and excluded from the analysis and the data values for the dependent and independent variables have been checked for equal variances, using Levene's test for Equality of Variances. Multicollinearity must also be checked for as this makes it difficult to determine the separate effects of individual variables. The correlation analysis in previous section did not detect multicollinearity between the independent variables. Lastly, a normal data distribution is assumed.

Bivariate Linear Regression

A standard bivariate linear regression analysis with one independent variable is carried out to determine if the independent variable in this model, work contract, has any effect on the dependent variable, knowledge-sharing behavior. A regression coefficient (R^2) is calculated and predicts the strength of the relationship between the independent variable and dependent variable (Saunders et al., 2009). In the model of this study the independent variable is a nominal variable and must therefore be treated as a 'dummy variable'. External consultants are coded as 1 and permanent employees as 0. The null hypothesis in a regression analysis is always that R^2 is equal to zero, meaning there is no relationship between the independent variable and the dependent variable.

The main hypothesis in this study was:

H1: *External consultants are more reluctant to share knowledge than standard employees.*

This hypothesis tests any difference in knowledge sharing behavior between groups with different work contracts. To test this hypothesis we regress knowledge sharing behavior on work contract. The regression analysis shows that work contract is not a significant predictor on knowledge sharing behavior. R^2 is equal to 0.9% and the P-value of work contract is 0.293. The hypothesis can thus be rejected. External consultants do not appear to be more reluctant to share knowledge than standard employees.

Figure 8: Bivariate linear regression results

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.092[a]	.009	.001	.61131

a. Predictors: (Constant), work contract

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.416	1	.416	1.113	.293[a]
	Residual	48.207	129	.374		
	Total	48.623	130			

a. Predictors: (Constant), work contract
b. Dependent Variable: Knowledge sharing behavior

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.132	.072		57.757	.000
	work contract	-.113	.108	-.092	-1.055	.293

a. Dependent Variable: Knowledge sharing behavior

Multiple Linear Regression

In a multiple regression analysis, the mediating variables are treated as independent variables to measure their effect on the dependent variable, knowledge-sharing behavior. Together, these variables have a high explanatory value on knowledge-sharing behavior. R^2 is equal to 0.472, which means that the overall model explains 47, 2% of a change in knowledge-sharing behavior. The p-value of this regression is less than 0.05 and is thus significant. The null hypothesis can be rejected and we can state that there exists a relationship between the independent variables and knowledge-sharing behavior. Looking at each individual variable's explanatory value, three variables are significant: organizational support (P-value=0.004), trust (P-value=0.036), and intrinsic motivation (P-value=0.05). This indicates support for hypotheses ***H2b***, ***H5b***, and ***H6b***. Figure 9 shows the results of the multiple regression.

Figure 9: Multiple linear regression results

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.687[a]	.472	.438	.45860

a. Predictors: (Constant), work contract, Intrinsic motivation, Extrinsic motivation, Trust, Org. Commitment, Job autonomy, Integration, Org.Support

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.965	8	2.871	13.649	.000[a]
	Residual	25.658	122	.210		
	Total	48.623	130			

a. Predictors: (Constant), work contract, Intrinsic motivation, Extrinsic motivation, Trust, Org. Commitment, Job autonomy, Integration, Org.Support
b. Dependent Variable: Knowledge sharing behavior

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.659	.432		1.524	.130
	Org.Support	.290	.099	.321	2.937	.004
	Trust	.180	.085	.159	2.121	.036
	Integration	.075	.084	.084	.884	.379
	Org. Commitment	.103	.096	.096	1.078	.283
	Job autonomy	.083	.051	.126	1.625	.107
	Intrinsic motivation	.158	.080	.164	1.980	.050
	Extrinsic motivation	-.015	.049	-.023	-.311	.757
	work contract	.044	.084	.035	.520	.604

a. Dependent Variable: Knowledge sharing behavior

Dummy variables are created for the control variables to be included in the regression. The control variables that are included are gender, age, education, and years of work experience. When including the control variables in the regression equation, the model is still significant (P-value=0.000) with an explanatory factor (R^2) of 49.2%. However, when looking at each individual variable, organizational support is now the only significant independent variable.

Stepwise Multiple Regression

A stepwise regression can be carried out to assess the strength of each individual variable on the dependent variable. One and one variable is introduced in the regression and its contribution to the model is calculated. Table 6 shows the results of the stepwise regression.

Table 6: Stepwise multiple regression

Results of "stepwise multiple regression" Order of entry of independent elements	Value of R square, cumulative	Level of Sig.
Organizational support	0.385	***0.00***
Intrinsic motivation	0.428	***0.002***
Trust	0.447	***0.038***
Job autonomy	0.461	0.078
Organizational commitment	0.467	0.219
Integration	0.471	0.371
Extrinsic motivation	0.471	0.79
Work contract	0.472	0.604
Control variables (age, gender, education, work experience)	0.492	0.08-0.9

Stepwise regression reveals that the variable organizational support has the highest explanatory value in this model, explaining 38.5% of the variation in the dependent variable. The variables trust, intrinsic motivation, and job autonomy increases the explanatory value of the model, while the following additional variables that are added, organizational commitment, integration, extrinsic motivation, and work contract, reveal a marginal and insignificant increase in R^2.

Multiple Regression of Work contract and Mediating Variables

To test the hypotheses in this study that relate to differences in work contract, a standard linear regression is carried out on each mediating variable acting as the dependent variable and work contract as the independent variable. Dummy variables are created for the control variables gender, age, education, and years of work experience. References for the dummy variables are: male, below 30 years, high school or below, and less than 10 years of work experience.

H2**:** a) *Perceived organizational support is lower for external consultants than permanent employees.*

Regressing organizational support on work contract shows that there is no significant relationship between work contract and organizational support when controlling for age, gender, education, and work experience. Thus, hypothesis ***H2a*** is rejected.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.755	.178		21.059	.000
	work contract	-.157	.123	-.115	-1.284	.202
	Female	.170	.121	.123	1.406	.162
	work_experience_ above10	-.097	.158	-.068	-.615	.540
	between 31-40	.233	.168	.165	1.384	.169
	between 41-50	.308	.208	.194	1.481	.141
	between 51-60	-.029	.239	-.013	-.120	.905
	bachelor	-.285	.151	-.190	-1.882	.062
	master	-.029	.149	-.020	-.193	.847

a. Dependent Variable: Org.Support

H3: *a) External consultants feel less integrated in the organization than permanent employees.*

A standard bivariate regression of integration on work contract results in a significant P-value (0.023). The Beta value is negative indicating an inverse relationship: those with an external work contract have a lower value of integration. Thus, independent t-test and bivariate regression indicates support for hypothesis ***H3a***. However, a multiple regression, controlling for age, gender, education, and years of work experience, the regression is not significant, with an R^2 of 7.2%, and significance level of work contract 0.063. According to this, hypothesis ***H3a*** should be rejected. This indicates that the lower level of integration found in the other two tests could be due to other variables, although it is difficult to say as neither control variable was found to be significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.696	.185		20.011	.000
	work contract	-.234	.127	-.169	-1.845	.068
	Female	.130	.125	.092	1.035	.303
	work_experience_ above10	.040	.164	.028	.247	.805
	between 31-40	.118	.175	.082	.676	.501
	between 41-50	.223	.215	.139	1.037	.302
	between 51-60	-.042	.247	-.019	-.169	.866
	bachelor	-.006	.157	-.004	-.035	.972
	master	-.008	.154	-.005	-.051	.959

a. Dependent Variable: Integration

***H4**: a) Organizational commitment is lower for external consultants than permanent employees.*

Regressing organizational commitment on work contract when controlling for age, gender, education, and work experience reveals no significant relationship between these variables. Hypothesis ***H4a*** is rejected.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.727	.151		24.612	.000
	work contract	-.082	.104	-.072	-.789	.432
	Female	.197	.103	.171	1.918	.058
	work_experience_ above10	-.009	.134	-.008	-.067	.946
	between 31-40	.160	.143	.136	1.117	.266
	between 41-50	.072	.177	.055	.408	.684
	between 51-60	-.056	.203	-.032	-.279	.781
	bachelor	-.144	.128	-.116	-1.122	.264
	master	.008	.126	.006	.062	.951

a. Dependent Variable: Org. Commitment

***H5:** a) External consultants experience less trust with the organization than permanent employees.*

Regressing trust on work contract shows that there is no significant relationship between work contract and trust when controlling for age, gender, education, and work experience. Hypothesis ***H5a*** is rejected. The control variables for ages 41-60 are significant, indicating that they experience more trust compared to those under the age of 30.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.852	.145		26.631	.000
	work contract	-.094	.099	-.087	-.946	.346
	Female	-.063	.098	-.057	-.641	.523
	work_experience_ above10	-.204	.128	-.179	-1.593	.114
	between 31-40	.258	.137	.229	1.889	.061
	between 41-50	.352	.169	.278	2.087	.039
	between 51-60	.400	.193	.237	2.068	.041
	bachelor	-.051	.123	-.042	-.413	.680
	master	.094	.121	.080	.777	.438

a. Dependent Variable: Trust

H6: *a) External consultants are less intrinsically motivated than permanent employees and b) more extrinsically motivated than permanent employees.*

Regressing intrinsic motivation on work contract reveals no significant difference when controlling for age, gender, education, and work experience. Hypothesis ***H6a*** is rejected.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.179	.176		23.795	.000
	work contract	-.009	.120	-.007	-.071	.943
	Female	-.033	.119	-.025	-.278	.781
	work_experience_ above10	.014	.157	.010	.088	.930
	between 31-40	-.019	.167	-.014	-.115	.908
	between 41-50	.073	.204	.049	.360	.720
	between 51-60	-.031	.234	-.015	-.130	.897
	bachelor	-.106	.149	-.075	-.708	.480
	master	.182	.147	.132	1.237	.219

a. Dependent Variable: Intrinsic motivation

Regressing extrinsic motivation on work contract while controlling for age, gender, education, and work experience, the model explains 10.2% of the variation in extrinsic motivation and the regression coefficient of the independent variable, work contract, shows a significant P-value (0.027). The Beta value is positive indicating that extrinsic motivation increases with an external work contract. Thus hypothesis ***H6b*** is supported.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.017	.241		12.517	.000
	work contract	.371	.165	.203	2.246	.027
	Female	.013	.164	.007	.078	.938
	work_experience_ above10	-.272	.216	-.141	-1.262	.209
	between 31-40	.003	.229	.001	.012	.990
	between 41-50	.071	.280	.033	.254	.800
	between 51-60	-.393	.321	-.139	-1.224	.223
	bachelor	.313	.205	.156	1.528	.129
	master	.059	.202	.030	.293	.770

a. Dependent Variable: Extrinsic motivation

H7: *a) External consultants experience less job autonomy than permanent employees.*

When regressing job autonomy on work contract controlling for age, gender, education, and years of work experience the model explains 9.3% of the variation in job autonomy and the regression coefficient of the independent variable, work contract, shows a significant P-value (0.049). The Beta value is negative indicating that job autonomy decreases with an external work contract. Thus hypothesis ***H7a*** is supported.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.771	.247		15.248	.000
	work contract	-.337	.169	-.181	-1.991	.049
	Female	-.044	.168	-.023	-.264	.792
	work_experience_ above10	.428	.221	.218	1.935	.055
	between 31-40	.009	.235	.005	.038	.970
	between 41-50	.093	.287	.043	.323	.748
	between 51-60	-.051	.330	-.017	-.153	.878
	bachelor	-.079	.210	-.039	-.376	.708
	master	.100	.207	.050	.480	.632

a. Dependent Variable: Job autonomy

4.7 Summary of Main Findings

This section includes a summary of the main findings from the statistical analysis. Correlation analysis, independent samples t-test, and different types of regression tests were run in order to test the hypotheses of this study. The main hypothesis of finding differences between permanent employees and external consultants' knowledge-sharing behavior was rejected. Differences were found between permanent employees and external consultants on the mediating variables, job autonomy, integration, and intrinsic motivation. Significant relationships between the variables organizational support, trust, and intrinsic motivation and the dependent variable knowledge-sharing behavior were supported. Table 7 summarizes the significant results from the various statistical analyses. Finally, the initial theoretical model is revised, illustrating the results found from the analysis.

Table 7: Summary of Results

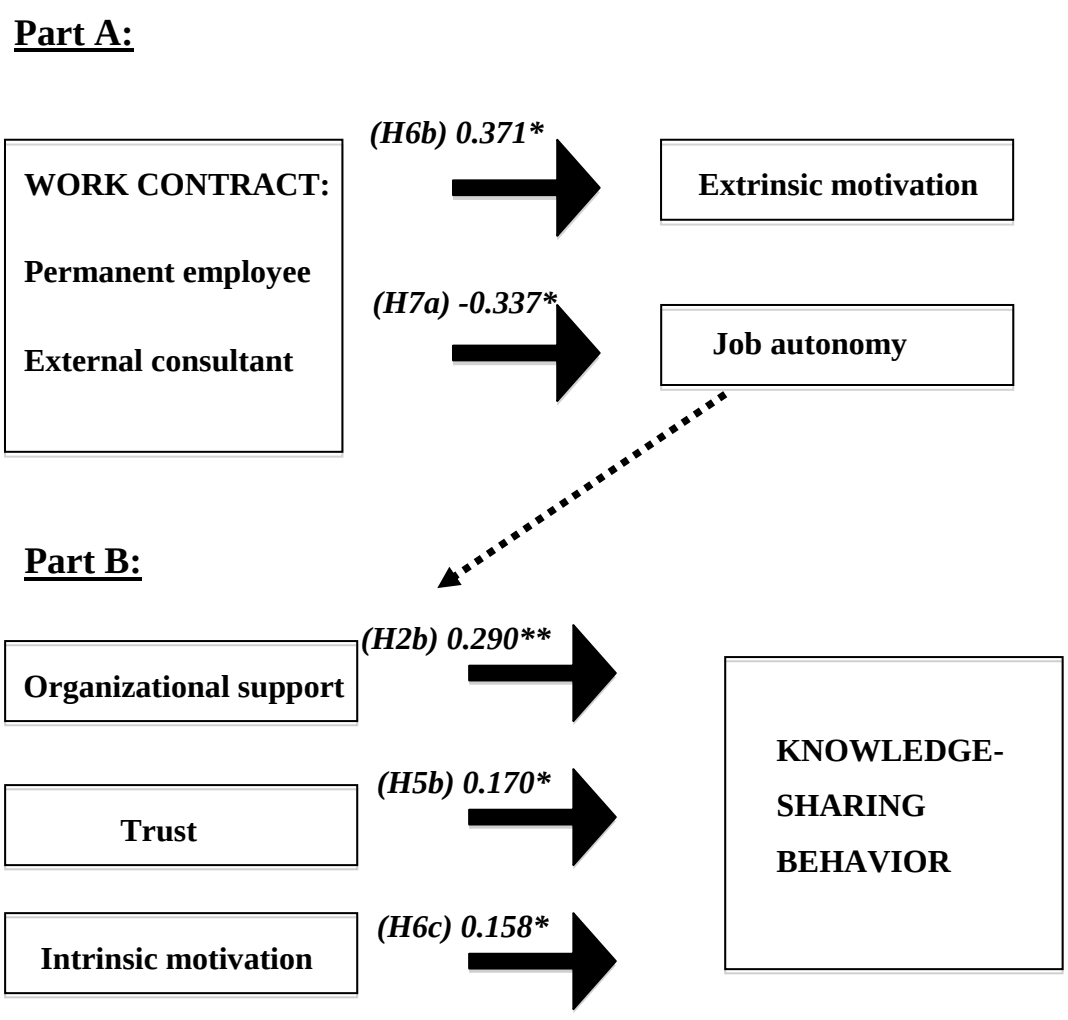
Statistical analysis	Significant results
Correlation analysis	Positive, moderately strong relationship between knowledge-sharing behavior and: • Organizational support • Organizational commitment • Trust • Integration • Job autonomy • Intrinsic motivation
Independent samples t-test	Significant difference in means between permanent/external employees on the variables: • Integration ***(H3a)*** • Job autonomy ***(H7a)***
Bivariate linear regression	***H1 is rejected***: no difference is found between permanent employees and external consultants' knowledge-sharing behavior
Multiple regression	• R^2***=0.472*** – high explanatory value of the model Significant P-values of the variables on knowledge-sharing behavior: • Organizational support – ***H2b supported*** • Trust – ***H5b supported*** • Intrinsic motivation – ***H6c supported*** Significant difference between permanent/external employees • Extrinsic motivation – ***H6b supported*** • Job autonomy – ***H7a supported***
Stepwise regression	• Organizational support accounts for 38.5% variance in the dependent variable • Intrinsic motivation statistically significant in explaining increase in R^2 • Trust statistically significant in explaining increase in R^2

4.7.1 Revised Theoretical Model

The theoretical model has been revised according to the results from the statistical analysis. As no relationship is found between work contract and knowledge-sharing behavior the model is separated in two. Part A of the model illustrates how work contract has an effect on the employees' perception of job autonomy and their extrinsic motivation. These variables did not show a significant effect on knowledge sharing behavior.

Part B illustrates that organizational support, trust, and intrinsic motivation effects employees' knowledge-sharing behavior. These variables have the same effect on knowledge-sharing behavior regardless of work contract and are thus separated from Part A. Job autonomy is correlated with organizational support, trust, and intrinsic motivation and thus a connection exists between the two parts of the model.

Figure 10: Revised Theoretical Model



5. Chapter 5: Discussion

This chapter discusses the main findings from the data analysis in the previous chapter. The findings are linked to the theories discussed in Chapter 3 and reasons for contradictions between theory and findings are considered. First, the main findings are discussed and second, the implications of these findings from both an academic and a practical perspective are highlighted.

5.1 Main Findings

A primary objective of this study was to investigate differences between employees with a permanent work contract and employees working as external consultants with regards to knowledge sharing. The study focused on various mediating variables that were expected to predict employees' knowledge sharing behavior. Three main findings resulted from the data analysis and are discussed in turn in this section.

Finding # 1: No significant difference in permanent employees and external consultants' knowledge-sharing behavior.

One of the main findings in this research is that there is no significant difference in permanent employees and external consultants' knowledge sharing behavior. Several factors were assumed, based on earlier theory and research, behind the expectation of different behaviors with regard to knowledge sharing. The first of these relate to employees' expectation of job security and promotional aspects. As noted by Ipe (2003), situations characterized by uncertainty, reduces willingness to share knowledge. Along with their short-term contract with the client organization, external consultants have less job security and expectation of promotional aspects within the organization.

First of all, it must be considered that the external consultants in this study may have permanent contracts with their formal employer, the leasing company. This would reduce their insecurity with regards to future employment. Second, if as Marler, Barringer, & Milkovich (2002) points out, individuals perceive their job security to be rooted in their own skills and knowledge, this will also alter their perception of job security. Assuming they do not see themselves dependent on the organization for job security but rather find this in their own skills and knowledge, they would constantly seek to maintain their skills and knowledge in order to stay competitive in the job market. From the descriptive statistics, we

could see that one of the primary reasons for choosing external consultancy work is to increase their skills and knowledge. In this case, they are eager to gain more knowledge from other workers and, in order to do so, they will be willing to share of their own knowledge. This is in line with the social exchange theory of Blau (1984). Individuals will regulate their interactions with other individuals based on a self-interest analysis of the costs and benefits of such an interaction. In accordance with the theory of reciprocity, external consultants will thereby share knowledge when they see that the value add for them lays in receiving knowledge from others. It can hence be argued that external workers perceive the benefits of sharing knowledge as an opportunity of increasing their own knowledge base, and thus strengthening their own competitive advantage. These arguments may also override the assumption that external consultants' may be reluctant to share knowledge because it reduces their competitive advantage.

Another assumption that is made is regarding the aspect of the external consultant's short-term contract. It must be considered that the worker at hand might not perceive the contract as a short-term relationship, but rather as the potential for building a long-term relationship. If the worker has an objective of pursuing a permanent contract it will be in his or her interest to act in accordance with the organization's goals. According to the descriptive statistics, achieving a permanent contract with the client organization is the second "number one reason" for external consultancy work. Hence, it is reasonable to assume they would be willing to share knowledge along the same lines as the permanent employees.

Next, limitations in the methodology of this study should also be assessed and can be a reason behind the finding of a converging similar knowledge sharing behavior between permanent and external workers. Based on the theoretical review it seems reasonable to state that the importance organizations put on knowledge, increasing skills and organizational capabilities, should be a well-known aspect for most employees, both permanent and external. Knowledge sharing is something organizations value and can be seen as "desirable behavior". Thus, when asking questions related to "desirable behavior", one can expect respondents to respond in accordance with this type of behavior. Despite assurance of anonymity, one does not want to be perceived in a "less desirable" light. The intention of sharing knowledge may be present and one agrees with it, but it might not be what actually happens in practice. Therefore, the questions and responses regarding knowledge sharing behavior may be biased.

Finally, it is considered that the organizations in this study may have well-established knowledge management practices through which they are able to enhance the knowledge sharing behavior of its employees. For instance, the large subsea organization pointed out that integration of their external consultants is highly emphasized. If the organizations hire external consultants in order to bring in specialized knowledge for certain projects, management might have a particular focus on taking advantage of this new knowledge, for example by promoting cooperation and trust between the two work groups. The motivations of the client organizations in this study regarding the use of their external consultants were not researched and thus we do not know exactly how the organizations relate to this. However, mechanisms may be in place that enhances knowledge-sharing behavior for their external employees, as well. A further look at the results from the mediating variables in this research, in particular the social mechanisms, can shed additional light on this aspect.

Finding # 2: Organizational support, trust, and intrinsic motivation have a significant effect on employees' knowledge sharing behavior.

In line with previous research and theories, organizational support, trust, and intrinsic motivation have a positive effect on knowledge sharing behavior of employees. Interestingly, there is found no significant difference on these three variables between permanent and external employees.

Organizational support was found to account for 38.5% of change in knowledge sharing behavior, implicating this as the most important variable to enhance knowledge sharing behavior. This supports previous research emphasizing organizational support as an important variable in influencing employees' attitudes and behavior. Perceived organizational support influences the employee's expectation of reciprocity and this can thereby be an explanation for why there is no difference on this aspect between permanent and external employees. If management manages to express equal concern and support for all groups of employees, not differentiating between permanent and external workers, expectations of reciprocity will be high for both. This expectation of reciprocity helps the organization promote knowledge sharing within the organization (Bartol et al., 2009). When external workers perceive the client organization to care about their well-being, opinions, and concerns, they are likely to reciprocate by acting in accordance with the client organization's goals. The finding in this study regarding external workers and perceived organizational support are equivalent to recent research on this topic (Vethe, 2011). Perhaps, as use of external consultancy has become more common, and the benefits of it have become

well known, management has increased focus on treating the two work groups the same. As external workers are no longer only beneficial for the organization for flexibility reasons but are also used as a source of new knowledge, organizations may have become aware that treating them equal to permanent employees encourages the attitudes and behavior that are beneficial for the organization.

Assuming a supportive management fosters loyalty and commitment from its employees, this could be a reason why organizational commitment was not found to have a significant impact on knowledge sharing behavior when other variables were included in the model. Organizational support appears to be more important as it influences employees' attitudes and thereby encourages organizational commitment.

This study also shows that trust is a significant predictor of knowledge sharing behavior. This finding is consistent with earlier theory that trust is an important factor in influencing individuals' actions (Ghoshal and Bartlett, 1994). It is reasonable to seek information from employees that you consider trustworthy.

More interestingly, there is not found any difference between permanent and external employees, which is inconsistent with previous research, which has indicated a certain degree of skepticism in sharing their knowledge with each other (Gran, 2007; Gullhaugen 2007). An explanation for this may be found in the limitations of the survey. The survey asks questions about sharing knowledge with their "colleagues" and "other departments". It is possible that the permanent employees do not interpret the external consultants as their "colleagues" in the organization; hence, the questions may not completely grasp the direct relationship between the two groups, but may be too general.

On the other hand, it can be argued that, in general, the trust levels in Norway are relatively high (Statistisk Sentralbyrå, 2012) and trust is an essential part of business. Acting with integrity and honesty is part of the country's cultural values. Organizations acting with transparency and integrity are considered trustworthy, and it would be natural to assume that this would be reflected in their employees. Additionally, external consultants are hired on a project-to-project basis. Maintaining a good reputation is therefore of high importance for them. Showing willingness to cooperate and share knowledge can enhance their perception of trustworthiness. This includes not sharing firm-specific knowledge from prior projects that could damage their reputation. Most external consultants are working on short-term

contracts and thus do not have the time to develop close ties with the client organization. According to Connelly & Gallagher (2004), it is more difficult for individuals who are not 'official' members of the organization to establish their credibility and have their knowledge accepted by permanent employees. However, when working alongside permanent employees with a management that demonstrates support and intentions of integrating the external workers, this could be contributing to enhancing overall trust between employees. Perhaps management in the organizations of this study is proactive and transparent with the intentions of the use of their external consultants and this may alleviate any doubts or suspicions from the permanent employees.

Lastly, intrinsic motivation was also shown to be a significant predictor of knowledge sharing behavior. This confirms results found in previous studies that also predict intrinsic motivation as a positive influence on knowledge sharing (Foss, 2009). It is interpreted from this that individuals are sharing their knowledge because they consider it an important part of their job and they find it personally satisfying to contribute. Furthermore, this could mean that the organization, or management, is successfully aligning individuals' expectations of the job with the organizations' goals.

There is not found any significant difference on intrinsic motivation between permanent and external employees. Increasing skills and knowledge is one of the most important reasons for choosing external consultancy work. They wish to find new challenges and learn more from working on different projects. Thus, knowledge sharing naturally becomes an important part of their work.

However, the author of this study is careful not to draw any strong conclusions on the variable intrinsic motivation, as the measurements of this variable have its limitations. Even so, its positive effect on knowledge sharing is in line with previous research on this topic.

Finding # 3: Permanent employees and external consultants differ with regards to job autonomy and extrinsic motivation.

The third important finding in this study is found in the variables where permanent employees and external consultants *do* differ. Permanent employees perceive a higher degree of job autonomy than external consultants. They are also less motivated by extrinsic rewards than external consultants.

It is not surprising that these two work groups perceive the degree of job autonomy differently. The reason behind this is likely to be the nature of external consultancy work. As mentioned in the theoretical chapter, external consultants have less control and independence over how they perform their work as the client organization makes the decisions regarding the work that is performed. Thus, it is natural that they have less job autonomy than permanent employees.

In previous research job autonomy has been closely linked to intrinsic motivation (Foss, 2009). External consultants have a high degree of extrinsic motivation, as is also seen in their number one reason for choosing external consultancy: "higher pay and flexibility" (see Table 3). However, there appears to be a tradeoff between job autonomy and extrinsic rewards for external consultancy work. They may get paid more as an external consultant, but their sense of freedom to carry out their work the way they wish to, is diminished. Although no significant relationship was found between job autonomy and knowledge sharing, job autonomy is highly correlated with intrinsic motivation. However, despite perceived differences in job autonomy between permanent and external employees, no significant difference was found in their intrinsic motivation. Explanations for this may be found in other variables that are more important for an employee's intrinsic motivation, or may be due to the limitations in the data set and the statistical techniques used for analysis.

5.2 Implications

The purpose of this study was to discover how permanent employees and external consultants behave differently, with a particular focus on knowledge-sharing behavior. With the increasing use of external consultants and a lack of research in this area, the question whether external consultants differ from permanent employees is of relative importance for organizations employing external consultants.

The finding of no difference between permanent employees' and external consultants' knowledge sharing behavior is an overall positive result for organizations with the objective of enhancing knowledge sharing between their employees. This implies that management can implement knowledge sharing mechanisms and expect the same effect for their employees, regardless of work contract. However, this is dependent on how the organization manages its external employees. Balancing the aspects of both organizational support and trust is an important consideration for managers of projects with permanent employees

working alongside external consultants. Including external employees in project meetings, feedback on work progress, in addition to team-building events, will demonstrate support from management. It could also facilitate building trust between the externals and the permanent employees. It is important to encourage a development of trust between permanent and external workers, as this will have a positive effect on knowledge sharing.

Permanent employees and external consultants were found to differ regarding job autonomy and extrinsic motivation, and although no direct significant relationship was found between these variables and knowledge sharing behavior, this may have implications in other areas. An implication of less job autonomy can be found in less proactivity and assuming less initiative with regards to new projects or ideas (Foss, 2009). Increasing employees' perception of job autonomy can thus have a positive effect on employees' creativity and engagement. This may be an important aspect particularly in organizations operating in innovative markets.

Another aspect to consider regarding job autonomy is that it may increase accountability. The more responsible the employees feel for the work they deliver, the more likely it is that the quality of work would be higher.

6. Chapter 6: Conclusion

This chapter provides the conclusion of this research study. It includes a summary of the findings, the limitations of the study and suggestions for future research. The research question of this study was:

What factors enhance knowledge-sharing behavior of external consultants, in comparison with permanent employees?

In order to answer the research question, relevant theory was examined and a theoretical model was proposed based on existing theory and previous research. Consequently, a survey was developed aimed at measuring the theoretical constructs. The methodology used has thus been a quantitative method, using a web-based survey followed by a quantitative analysis of the results.

6.1 Main Findings

As the importance and focus of knowledge sharing has increased in organizations, it is interesting to know how they can influence the knowledge sharing behavior of their employees, both permanent and external workers. Employment contract influences the attitudes and behavior of the employee. Thus, the main hypothesis of this research was that external consultants are more reluctant to share knowledge than permanent employees. This is due to the nature of external consultancy work and their short-term relationship with the organization. If the organization successfully demonstrates trust and support, this could mediate the effect of the external worker's short-term contract. Hence, this study also compared permanent and external workers on how they perceive organizational support, commitment, trust and integration in the organization, in addition to their perception of job autonomy and individual motivation.

Three main findings resulted from this research:

1. *There is no significant difference in permanent employees and external consultants' knowledge sharing behavior.*
2. *Organizational support, trust, and intrinsic motivation have a significant effect on employees' knowledge sharing behavior.*

3. *Permanent employees and external consultants differ with regards to job autonomy and extrinsic motivation.*

Most importantly, this research found no significant difference in the knowledge sharing behavior of permanent employees and external consultants. One explanation may be found in an altered perception of job security for external consultants. If they do not see themselves dependent on the organization for job security but rather find this in their own skills and knowledge, they should be more willing to share knowledge. External workers may perceive the benefits of sharing knowledge as an opportunity of increasing their own knowledge base, and thus strengthening their own competitive advantage. A second explanation is if the worker has an objective of pursuing a permanent contract, he or she will perceive the short-term external contract as the potential for building a long-term relationship and it will thus be in his or her interest to act in accordance with the organization's goals.

Second, this research emphasizes organizational support, trust, and intrinsic motivation as important variables in influencing employees' knowledge-sharing behavior. There is found no significant difference on these three variables between permanent and external employees, which supports the first finding.

Finally, permanent employees and external consultants have different perceptions of job autonomy, which is as expected due to the nature of external consultancy work. This may have implications for individual initiative and accountability.

Findings of this study can be helpful when establishing knowledge management practices in the organization. It also provides further insight as to how to manage project teams consisting of both permanent and external employees and enhancing cooperation between these two work groups.

6.2 Limitations

A couple factors should be considered regarding the limitations of this research. Firstly, the simplification of the independent variable in the survey limits the information about type of external work contract. It does not specify what type of contract the external consultants have. They could be working for a THA or a contract company, and could be either full-time or part-time workers – thus further knowledge about the sample in this study could be valuable. The description of external workers in this context is therefore generalized to being

hired through a third party. This should be taken into consideration when generalizing to specific types of external work contracts.

All permanent employees in this study belong to the same organization. Applicability of the findings of this study to other settings can therefore be limited. Contextual factors play an important role for the generalizability of a study. Organizational culture may be specific to one organization, and its human resource management practices may also differ between organizations. Therefore results are likely limited to the sample in this research and the organizational context they are working in. However, results regarding external consultants should be generalizable to other organizations in this industry as the sample in this study come from different hiring agencies and work for various client organizations.

This study generally knows little about the client-organization's motives and purposes for using external workers. This influences how the external workers are managed and the degree of integration in the client organization. Thus, interviews with managers in the client organization could provide additional explanations for the results of this study.

Finally, a limitation of using surveys is that respondents might answer what they believe is the 'correct' answer. In addition, strong correlations exist between the mediating variables and may affect the outcome of the statistical methods used. Combining this quantitative research with qualitative interviews could therefore give more in-depth explanations for the results found in the quantitative analysis.

6.3 Suggestions to further research

This research provides additional support to findings presented in the literature, but also presents new findings in a less studied field and sheds light on areas that need further research. The dataset gathered in this research can also provide several possible research angles.

It would be interesting to further research external consultants' motivation. External consultants have different reasons for choosing this type of work contract and thereby different motivations regarding their relationship with the client organization. Organizational behavior may vary between external consultants depending on their motivation. It may also vary depending on the length of their contract with the client organization, and also between

different types of external work contracts. Therefore future research could consider variations within external consultancy work. Specifically distinguishing between the categories of external workers based on their preference for external work contract.

Further research could also be done on the effects of lower job autonomy for external consultants. This research depicts a significantly lower perception of job autonomy among external consultants but the effects of this and how to manage it could receive further attention. Future research could also consider different types of organizations and industries where external work arrangements are common. More quantitative studies should be made on these work groups, which highlights their different contract forms.

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Appendix

Appendix A – Complete Survey

The following survey contains questions about your employment, your relationship with the organization, knowledge sharing, and your motivation. The purpose of the survey is to compare permanent employees to external consultants and increase our understanding of the differences between them, what motivates them, and how we can enhance knowledge sharing. The survey is administered through NHH (Norwegian School of Economics) and results are only for academic purposes. All information obtained through this survey is anonymous and cannot be linked to individuals. The survey will take approximately 5-10 minutes to complete. It can be taken in Norwegian or English. Your response is a valuable contribution to academic research. Thank you very much for taking the time to complete this survey!

1. Gender
    a. Male
    b. Female
2. Age
    a. Below 30
    b. Between 31-40
    c. Between 41-50
    d. Between 51-60
    e. Above 60
3. Education
    a. High school or below
    b. Bachelor degree
    c. Master/MBA degree or higher
    d. Other (please specify) _____
4. Years of work experience
    a. Less than 5
    b. Between 5-10
    c. Between 10-15
    d. Above 20
5. Current work contract
    a. Permanent employee of (large subsea organization)
    b. External consultant

6. The client organization you are currently working for: (client organization= where you perform your daily work (*only external consultants)*
    a. Large subsea organization *(anonymous)*
    b. other
7. How many years have you been employed in this organization? *(only permanent employees)*
    a. less than 1 year
    b. 1-3 years
    c. 4-6 years
    d. 7-10 years
    e. more than 10 years
8. How long is your current contract with the client organization? *(only external consultants)*
    a. less than 6 months
    b. 6-12 months
    c. 12-18 months
    d. longer than 18 months
9. Please rank the THREE main reasons for choosing work as an external consultant: (number 1 being most important)
    a. _____ Possibility of future permanent contract with the client organization
    b. _____ Makes the job searching process easier
    c. _____ Not sure with regards to future choice of career and this is a way to try out different options
    d. _____ Higher pay and more flexibility
    e. _____ To work on more new and challenging projects
    f. _____ Increase my skills and knowledge
    g. _____ Other (please specify)
10. Do you have a manager position in the department/project you are working on?
    a. Yes
    b. No
11. Would you say you have specialized skills that the organization you are working for is dependent on?
    a. Yes
    b. No
12. Do you work mainly onshore or offshore?
    a. Onshore
    b. Offshore

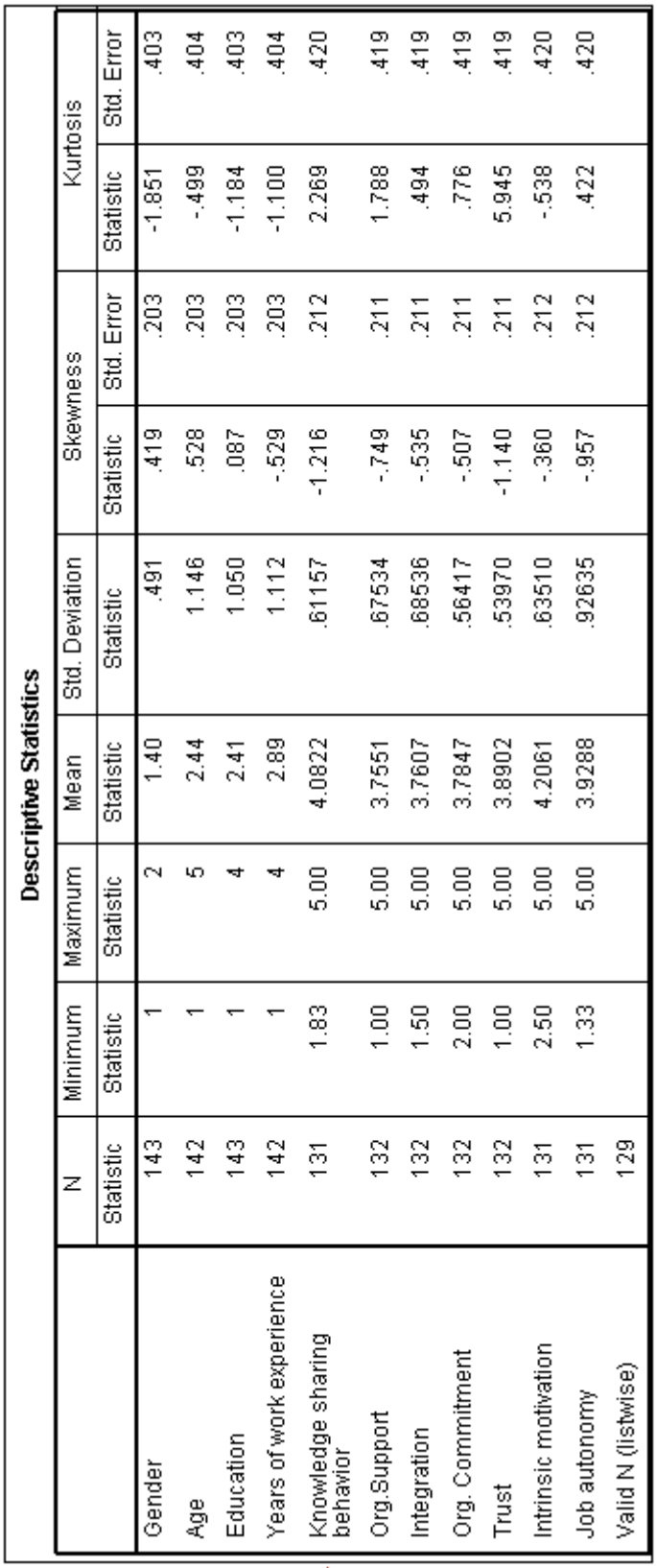
(Note: the following questions emphasized "client organization" for external consultants)

13. Please rate your agreement with the following statements about the organization you are currently working for:
    a. The organization really cares about my well-being.
    b. I feel very little loyalty to this organization.
    c. The organization values my opinions.
    d. I am willing to put in an extra effort, beyond what is normally expected, to help the organization become successful.
    e. The organization strongly considers my goals and values.
    f. I could just as well be working for a different organization as long as the type of work was similar.
    g. I really care about the fate of this organization.

h. In general, I feel included and as a part of this organization.
i. I take part in any relevant project meetings.
j. I have access to any relevant courses or seminars.
k. I receive feedback from my superior on my job performance.

14. When seeking information or advice from a colleague on a project...
    a. ... I assume he or she would always look out for my interests.
    b. ... I believe that this person approaches his or her job with professionalism and dedication.
    c. ... I expect he or she will respond constructively or caringly.
    d. ... given his or her track record, I see no reason to doubt this person's competence or preparation.
15. The following questions refer to how knowledge sharing takes place in your organization. To what extent do you...
    a. ...receive knowledge from colleagues in the same department as you?
    b. ...receive knowledge from other departments in the organization?
    c. ...share your opinions, ideas, and expertise with your co-workers?
    d. ...share your opinions, ideas, and expertise with other departments in the organization?
    e. ...perceive knowledge sharing as part of your job?
    f. ...seek professional advice from your colleagues?
    g. ...have enough time to share knowledge with your colleagues?
    h. ...share knowledge and expect the favor to be returned to you in the future?
16. I share knowledge because...
    a. ... I find it personally satisfying.
    b. ...it may help me get promoted.
    c. ...I think it is an important part of my job.
    d. ... I want my colleagues or supervisors to praise me.
17. To what extent is your job characterized by the following:
    a. The freedom to carry out my job the way I want to.
    b. The opportunity for independent initiative.
    c. High level of variety in my job.
18. Please indicate your agreement with the following statements about your future career orientation: *(only external consultants)*
    a. Job security is very important for me.
    b. In a couple years, I expect to be a permanent employee, either for the current client organization or another.
    c. I go after interesting projects, not particular employers.
19. Please indicate your agreement with the following statements about your future career orientation: *(only permanent employees)*
    a. Job security is very important for me.
    b. In three years time I expect to have gotten promoted within this organization.
    c. In three years time I expect to be working somewhere else.
    d. In three years time I expect to be working as an independent contractor.

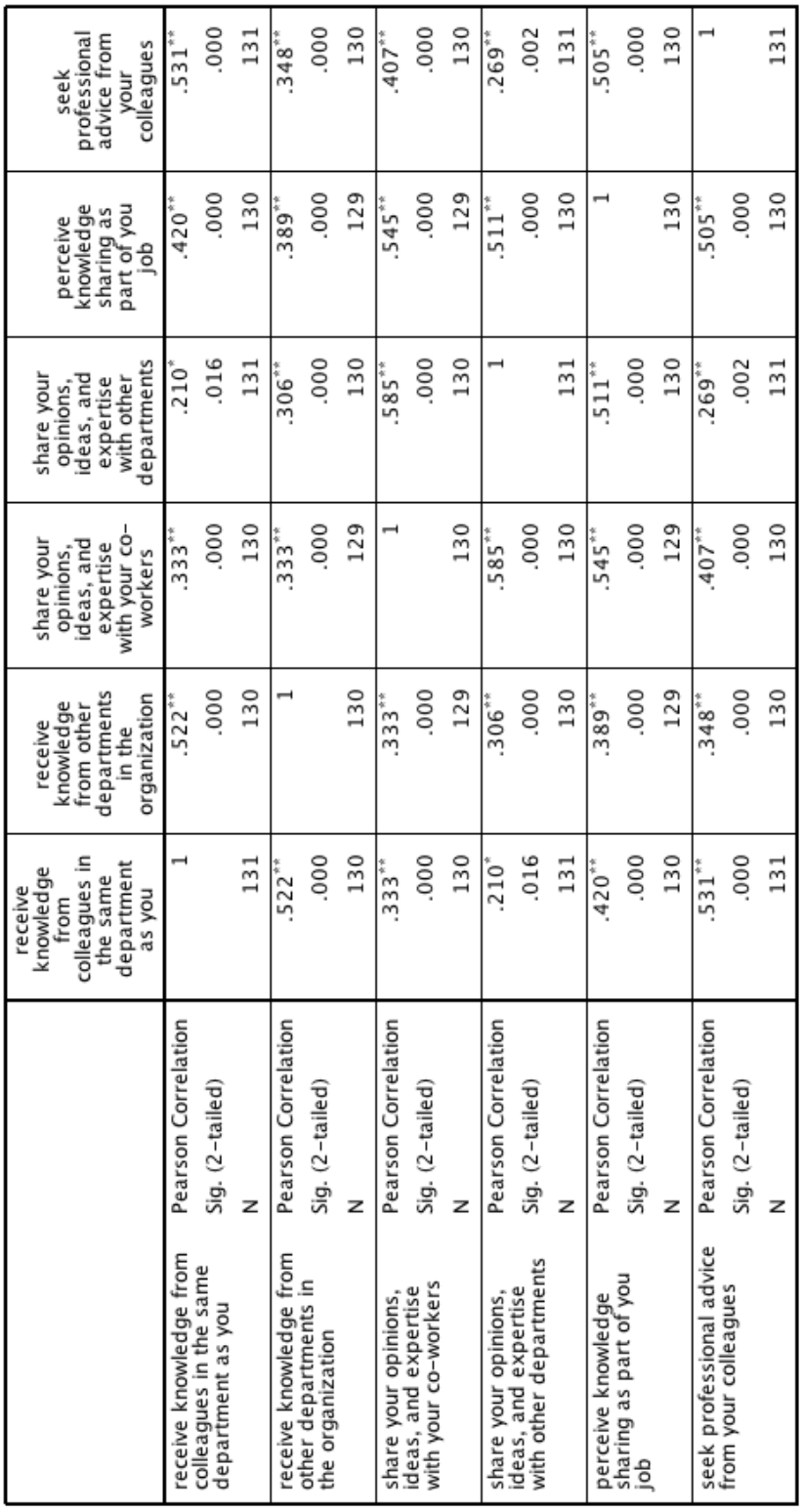
Appendix B – Descriptive Statistics



Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Gender	143	1	2	1.40	.491	.419	.203	-1.851	.403
Age	142	1	5	2.44	1.146	.528	.203	-.499	.404
Education	143	1	4	2.41	1.050	.087	.203	-1.184	.403
Years of work experience	142	1	4	2.89	1.112	-.529	.203	-1.100	.404
Knowledge sharing behavior	131	1.83	5.00	4.0822	.61157	-1.216	.212	2.269	.420
Org.Support	132	1.00	5.00	3.7551	.67534	-.749	.211	1.788	.419
Integration	132	1.50	5.00	3.7607	.68536	-.535	.211	.494	.419
Org. Commitment	132	2.00	5.00	3.7847	.56417	-.507	.211	.776	.419
Trust	132	1.00	5.00	3.8902	.53970	-1.140	.211	5.945	.419
Intrinsic motivation	131	2.50	5.00	4.2061	.63510	-.360	.212	-.538	.420
Job autonomy	131	1.33	5.00	3.9288	.92635	-.957	.212	.422	.420
Valid N (listwise)	129								

Appendix C – Correlation matrix of indicators of the dependent variable "knowledge sharing behavior"



Correlations

		receive knowledge from colleagues in the same department as you	receive knowledge from other departments in the organization	share your opinions, ideas, and expertise with your co-workers	share your opinions, ideas, and expertise with other departments	perceive knowledge sharing as part of you job	seek professional advice from your colleagues
receive knowledge from colleagues in the same department as you	Pearson Correlation	1	.522**	.333**	.210*	.420**	.531**
	Sig. (2-tailed)		.000	.000	.016	.000	.000
	N	131	130	130	131	130	131
receive knowledge from other departments in the organization	Pearson Correlation	.522**	1	.333**	.306**	.389**	.348**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	130	130	129	130	129	130
share your opinions, ideas, and expertise with your co-workers	Pearson Correlation	.333**	.333**	1	.585**	.545**	.407**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	130	129	130	130	129	130
share your opinions, ideas, and expertise with other departments	Pearson Correlation	.210*	.306**	.585**	1	.511**	.269**
	Sig. (2-tailed)	.016	.000	.000		.000	.002
	N	131	130	130	131	130	131
perceive knowledge sharing as part of you job	Pearson Correlation	.420**	.389**	.545**	.511**	1	.505**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	130	129	129	130	130	130
seek professional advice from your colleagues	Pearson Correlation	.531**	.348**	.407**	.269**	.505**	1
	Sig. (2-tailed)	.000	.000	.000	.002	.000	
	N	131	130	130	131	130	131

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Appendix D – Correlation matrix of indicators of the mediating variable "motivation"

Correlations

		I share knowledge because... -... I find it personally satisfying.	I share knowledge because... -...it may help me get promoted.	I share knowledge because... -...I think it is an important part of my job.	I share knowledge because... -... I want my colleagues or supervisors to praise me.
I share knowledge because... -... I find it personally satisfying.	Pearson Correlation	1	.244**	.334**	.248**
	Sig. (2-tailed)		.005	.000	.005
	N	130	130	130	129
I share knowledge because... -...it may help me get promoted.	Pearson Correlation	.244**	1	.077	.591**
	Sig. (2-tailed)	.005		.382	.000
	N	130	131	131	130
I share knowledge because... -...I think it is an important part of my job.	Pearson Correlation	.334**	.077	1	.119
	Sig. (2-tailed)	.000	.382		.176
	N	130	131	131	130
I share knowledge because... -... I want my colleagues or supervisors to praise me.	Pearson Correlation	.248**	.591**	.119	1
	Sig. (2-tailed)	.005	.000	.176	
	N	129	130	130	130

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix E – Correlation matrix of dependent and mediating variables

Correlations

		Knowledge sharing behavior	Org.Support	Integration	Org. Commitment	Trust	Intrinsic motivation	Extrinsic motivation	Job autonomy
Knowledge sharing behavior	Pearson Correlation	1	.620**	.505**	.471**	.414**	.440**	-.060	.394**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.498	.000
	N	131	131	131	131	131	131	131	131
Org.Support	Pearson Correlation	.620**	1	.683**	.640**	.428**	.401**	-.086	.400**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.331	.000
	N	131	132	132	132	132	131	131	131
Integration	Pearson Correlation	.505**	.683**	1	.485**	.359**	.291**	-.186*	.407**
	Sig. (2-tailed)	.000	.000		.000	.000	.001	.033	.000
	N	131	132	132	132	132	131	131	131
Org. Commitment	Pearson Correlation	.471**	.640**	.485**	1	.239**	.388**	-.088	.240**
	Sig. (2-tailed)	.000	.000	.000		.006	.000	.320	.006
	N	131	132	132	132	132	131	131	131
Trust	Pearson Correlation	.414**	.428**	.359**	.239**	1	.279**	-.125	.155
	Sig. (2-tailed)	.000	.000	.000	.006		.001	.154	.076
	N	131	132	132	132	132	131	131	131
Intrinsic motivation	Pearson Correlation	.440**	.401**	.291**	.388**	.279**	1	.240**	.380**
	Sig. (2-tailed)	.000	.000	.001	.000	.001		.006	.000
	N	131	131	131	131	131	131	131	131
Extrinsic motivation	Pearson Correlation	-.060	-.086	-.186*	-.088	-.125	.240**	1	-.084
	Sig. (2-tailed)	.498	.331	.033	.320	.154	.006		.338
	N	131	131	131	131	131	131	131	131
Job autonomy	Pearson Correlation	.394**	.400**	.407**	.240**	.155	.380**	-.084	1
	Sig. (2-tailed)	.000	.000	.000	.006	.076	.000	.338	
	N	131	131	131	131	131	131	131	131

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).