

## Chapter 1

# THE BUSINESS TRANSACTION THEORY AND MORAL HAZARDS FOR KNOWLEDGE SHARING: AN EMPIRICAL STUDY

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Individuals don't offer information (knowledge) for free. Therefore, knowledge sharing can be regarded as a business transaction process. During this process humans use a tacit but probably unique function--independent from cultural roots--to evaluate the value of information. After conducting a comprehensive company survey in Europe, we found indicators supporting the business transaction theory. Additionally, we selected a subset of companies and asked employees their thoughts about the motivators for knowledge sharing and working performance. In so doing we performed a cluster analysis and mapped the answers to Alderfer's pyramid. Very important cultural-dependant moral hazards for knowledge sharing were detected.

## 1. Motivation

Knowledge management is not only an IT challenge; foremost it is discovering how to motivate people to share valuable information so that intellectual capital of a company can be leveraged. Bontis (2002), Edvinsson and Malone (1997) and Sveiby (1997) see intellectual capital as the "stock" of knowledge that exists in an organization at a particular point in time. Managing this stock remains a challenge, as there is the need to socialize and codify tacit knowledge. Furthermore, we found knowledge acquisition was only successful when people were willing to cooperate. Willingness to cooperate, in turn, is strongly dependent on the trust level (Huener et al., 1998) in an organization. And it is not only the

trust level that is important; it is the value of the information itself that plays a major role during information (knowledge) exchange.

Barachini (2003) developed a thought model, which maps the information exchange process between humans to the investment processes of the modern portfolio theory. He argues that knowledge always has been the cornerstone for mankind to survive. Therefore, in his opinion, individuals don't offer information (knowledge) for free. To establish a successful knowledge-sharing culture an organization must especially consider trading aspects of modern portfolio theory and refrain from being exclusively dependent on trust, attitude, leadership, and group support. In the company survey presented herein we found indicators supporting the business transactions theory. We also identified moral hazards, which hamper knowledge exchange within a society. It is important to note that parts of the presented results strongly depend on European culture and cannot be generalized as such.

## **2. Background of the Business Transaction Theory**

Barachini (2002) defined two types of information exchange. Type-1 is the immediate exchange of information in both directions. Thus, sender and receiver give information away. This type of duplex information exchange can be mapped to over-the-counter businesses transactions executed by banks.

Type-2 is more complicated because information flow is, first of all, unidirectional. This concept is better defined in two scenarios: 1) when we consider the fact that we earn money by way of our profession as e.g. a teacher or 2) when we consider that we offer information to individuals, investing in hopes to receive even more valuable information in return at some future date. Type-2 of information exchange can be mapped to the most prominent type of option contracts--the call option for stocks. This agreement gives the buyer the right to buy from the option writer a specific number of shares of a particular company at a specific purchase price at any time<sup>1</sup> up to and including a specific date.

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<sup>1</sup> For US options only.

Figure 1 shows the P&L graph<sup>2</sup> of a buyer. The buyer of a call option will have to pay the writer a premium in order to get the writer to sign the contract. The fair value of an option can be evaluated by the binomial option-pricing model or by the more modern method from Black-Scholes (Sharpe et al., 1995):

$$\text{Fair value} = N(d1) * P_s - E * N(d2) / e^{RT}$$

Where:  $d1 = (\ln(P_s/E) + (R + 0.5\sigma^2)T) / \sigma * \text{sqr}T$ ,  $d2 = d1 - \sigma * \text{sqr}T$

$P_s$  = Current market price of underlying stock

$E$  = Exercise price of option

$R$  = Compound risk free rate of return

$T$  = Time remaining before expiration

$\sigma$  = Risk of the underlying stock

sqr = square root

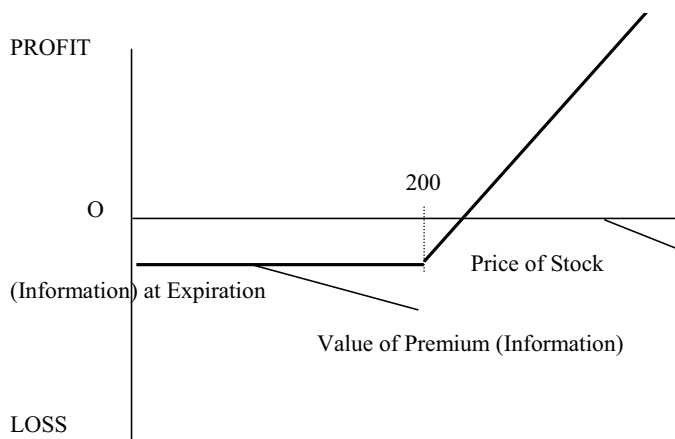


Figure 1. P&L graph for “buy a call”.

<sup>2</sup> Profit and Loss.

Figure 1 relates the value of a call option with an exercise price of 200 to the price of the underlying stock of expiration. If the stock price is below 200, the option will be worthless when it expires, and the writer will gain the premium. If the price is above 200, the option can be exercised for 200 in order to obtain a security with a greater value than 200. As a result the option buyer will realize a net gain that will equal the difference between the securities market price and the 200-exercise price. However, in practice the calculations are even more complicated due to margin requirements, commission payments, and other market-making activities.

Type-2 information exchange describes the process by which one person (the buyer) gives information away, hoping to get even more valuable information in the future. The information offered to the writer has some value--the premium. The buyer invests in hopes he will receive in return another type of information that is at least as valuable as the information premium he gave. For our purposes, the underlying asset is not stock but again it consists of information. Following the analogy of this theory, then, the person who delivers information is the buyer of a call option.

The difficulty lies in determining how to evaluate a fair price for a piece of information which is yet unknown. The Black-Scholes formula is based on statistics, whereby the exercise price is known, the risk of the underlying common stock can be evaluated, and the option has a well-defined expiration date<sup>3</sup>. In the case of information brokerage, we don't know even the value of the underlying because it is an unknown piece of information that might be offered from the writer at a future time. In the Black-Scholes formula the current market price of the underlying stock can be evaluated. Since one type of information is evaluated differently from brain to brain, no objective evaluation can be performed for information generated by humans.

Thus, each of us uses our own evaluation function, which might be similar from brain to brain; however, due to different context knowledge, e.g. experience or intuition, the same piece of information is evaluated differently on an individual basis. Therefore statistics like those in the

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<sup>3</sup> This is true for European options – US options can be exercised arbitrarily.

Black-Scholes formula cannot be applied immediately since the values of Ps, E, R and T represent individual functions. The parameter T is indeterminable since we don't know when and even if we will receive valuable information in the future. Thus, a fair price for information cannot be calculated. Nevertheless, the P&L statement of a call option can be used as a thought model when we talk about information exchange<sup>4</sup> between humans. By applying a very specific survey we hoped to find justifications for the business transaction theory.

### 3. The Method

We selected 150 companies in Europe<sup>5</sup> and asked each to select ten employees<sup>6</sup> to participate in an electronic questionnaire (see Figure 2).

CODE	QUESTION	Score 0-12
	What is your motivation to exchange information with colleagues in your company? Please distribute scores between 0 (low) – 12 (high)	
Q1	Justification or refutation of personal perceptions	
Q2	More acknowledgement and better acceptance of my person and my ideas	
Q3	As part of a network I need to communicate (rumors, news, needs)	
Q4	I need it because of therapeutical reasons, will get sick otherwise	
Q5	I need it to learn from each other	
Q6	I need it because I have a desire to show off	
Q7	I am dependant on information and sometimes forced to use it	
Q8	To built up trust	
Q9	I am curios	
Q10	I want to reach my own goals	
Q11	I want that my group reaches its goals	

Figure 2. Questionnaire for the online survey.

<sup>4</sup> Type-2 information exchange.

<sup>5</sup> Germany, Austria, Switzerland.

<sup>6</sup> Management & Employees in total 1.500 persons.

Using the online survey, we asked 1,500 people to score on a continuum between 0 and 12 their response to eleven separate statements about the motivation for information exchange within companies.

In the second phase of research we created a focus group with participants randomly selected from 40 of the 150 companies used in the online survey. A structured focus group interview protocol was developed, and two researchers conducted each of the 40 direct interviews, soliciting answers to open questions. The motivation for the open interviews was twofold. Firstly, we reassured ourselves that the respondent understood the electronic questionnaire, and that our interpretation of their answer matched their intent. Secondly, we tried to identify motivators and hazards for the working performance of employees. In so doing, we performed a cluster analysis and mapped the answers to the Alderfer's pyramid. The results reflect the current fears and hopes of the Middle European culture in its worldwide context.

#### **4. Results of the Survey**

The results of the survey (Figure 3) show, that seven of the eleven statements were scored above the average level of six points. Figure 3 shows the means of the answers, and Figure 4 shows the variances of the results. According to this plot (Figure 4) we identified that there are exactly three statements with very low variance. Therefore we believed it worthwhile to discuss these three statements thoroughly during the interview phase.

We determined that “justification and refutation of perception”, “reaching own goals”, “learning from each other”, and “building up trust” are the major motivations for information exchange--the latter previously discovered by Huener (1998). However, this result does not justify the business transaction theory. We needed, therefore, to extract the meaning of the statements by conducting interviews, hoping to identify interpretations supporting the business transaction theory.

During our interviews we found that the statement “reaching own goals” needed deeper discussion, especially as it relates to the business transaction theory.

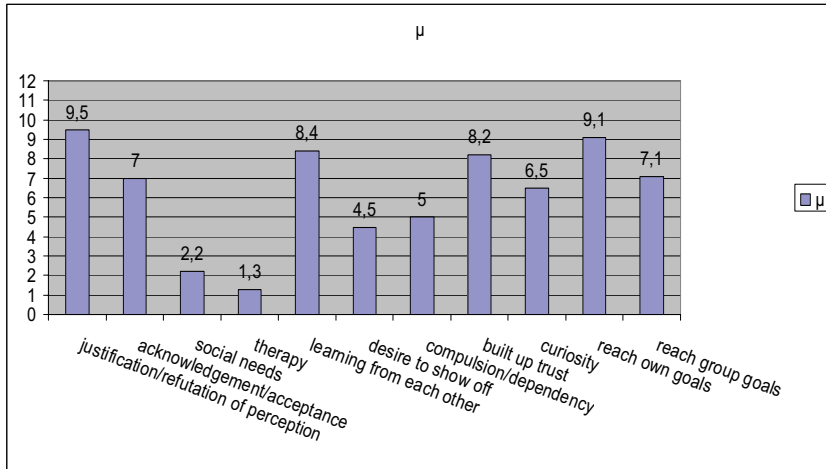


Figure 3. The mean of the answers.

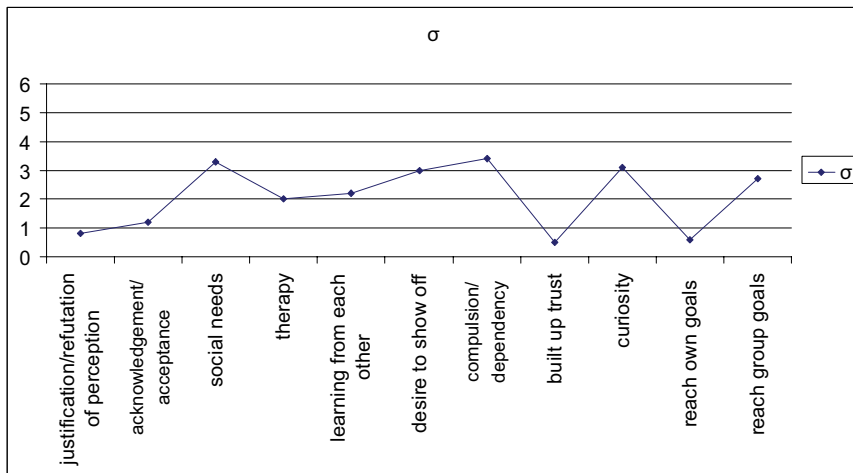


Figure 4. The variances of the answers.

There was common agreement among focus group participants that people’s goals are linked with value. Thus, each goal has some personal value. Since most of the individual goals can only be achieved through information and knowledge sharing, it seems to be the summary<sup>7</sup> of all

<sup>7</sup> Or some mathematical function like integral or weighted summary.

types of information and their value e, which constitutes the individual value of the goals. The information trading process--with its asymmetric and individual evaluation of information--constitutes the cornerstone of this value chain.

The importance given by respondents to the statement “reaching own goals”, as well as the very low variance in scoring this statement, and most importantly the interpretation of such as described by focus group members gives us confidence that the business transaction theory is likely correct. Although we believe that differing cultures would probably favor other factors<sup>8</sup>, we are convinced that the business transaction theory is valid and independent of cultural differences. To our knowledge, setting up goals is a cultural, independent human property. If we compare investigations about innovative online communities--as was performed with Niketalk [Füller et al., 2006] first of all seems to reflect that knowledge is exchanged for free. However, a deeper analysis shows that the main motivations to share knowledge in this case are the desire to help, striving for recognition from others, and deriving enjoyment from interaction. These factors in turn create satisfaction, which is of personal value to individuals. In this case the sole purpose of goal setting is fun.

The second part of our survey was devoted to the performance of employees. Some researchers see a connection between performance and knowledge sharing. Alternatively, Sveiby (2002) has shown that there is absolutely no empirical evidence that more knowledge sharing is creating more value than competition.

During our interviews we identified motivators as well as moral hazards, which hamper knowledge exchange within a society. We performed a cluster analysis from our interviews and mapped the answers to the Alderfer’s pyramid (Figure 5).

Like Hartmann (1964), we present a summary of existence needs, biosocial needs, cognitive needs, and psychosocial needs. For statistical relevance, we only present those extracted opinions, which are supported by more than 70% of focus group members. Compared to the online

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<sup>8</sup> In Japan e.g. the factor “reach group goals” is probably more important than “reach own goals”.



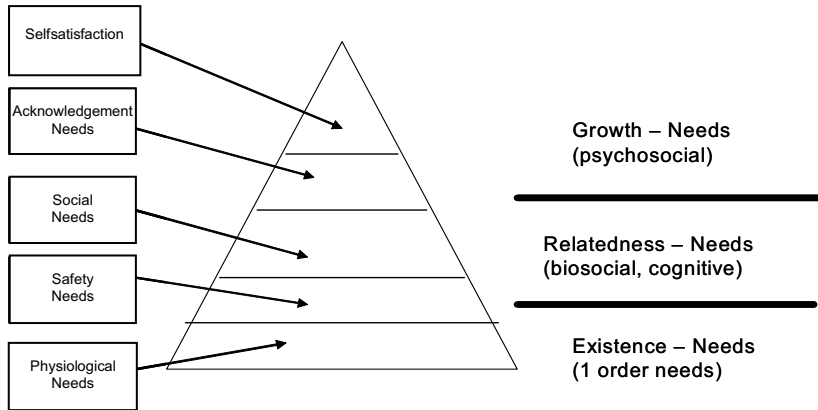


Figure 5. Aldersfers pyramid.

survey, the random sample is rather small, and it represents a limited domain<sup>9</sup>. The results strongly depend on cultural roots and personal societal status.

The following common existence needs and motivators were identified:

- Participation affecting company results (success) is important: Success should be measured on individual and collective performance. Part of a salary should be dependent on the personal ability to cooperate. People felt that the European educational system is not successful in teaching cooperative working techniques.
- Salary variance between CEOs and workers is perceived as too great: Participants cite discomfort about the salary difference between CEOs and blue color workers<sup>10</sup>. Significant differences split the society and subsequently will not promote knowledge sharing between classes. This will in turn hamper economic growth.
- Fringe benefits are important.

<sup>9</sup> 40 employees.

<sup>10</sup> This is true also for white and gold colour workers.

- Both management and the “working class” need company binding programs. The longevity of employment directly affects the involvement in corporate knowledge processes.

We conclude that there is a substantial moral hazard for knowledge sharing. It is the salary and, thereof derived, as well as the power distance--as explained by Hofstede (2005)--which hampers knowledge exchange between humans. Moreover, there is a need for improved metrics to evaluate collective performance indicators.

The following common biosocial needs and motivators were identified:

- Dependable information is important:  
Honest, correct, and timely information is needed. Adherence to this principle prevents companies from being the object of rumors while supporting working morale in teams.
- Promotion of wellness is important:  
Wellness seems to be one of the major challenges for humans. Support for a variety of sport-related activities and healthy meals in addition to the corresponding education of such puts a company in pole position.
- Integration of elderly people is important:  
In contrast to e.g. China, Europe does not appreciate the accumulated know-how of elderly people. This is most probably due to the existing reward system in Europe, in which older people earn more money than younger, and very soon their pay, when value-compared, is too expensive.

The latter point needs an especially intensive consideration so that knowledge flow between generations can work properly; if not, reinventing the wheel is unavoidable.

The following common cognitive needs and motivators were identified:

- More knowledge sharing and incentives are desired:  
Too much competition does not promote knowledge sharing. Respondents felt that companies don't exploit all the available theoretical incentive methods. Many felt that knowledge sharing is not always believed to be positive.
- Better empowerment is beneficial:  
Empowerment was seen as the cornerstone for innovation. In this respect, people felt that learning is important. However, management in Europe has yet to develop the right attitude toward error acceptance. Making errors is still punished in some industries.
- Working morale and a productive atmosphere must be maintained:  
Respondents suggested that gaining e.g. 1 Euro through innovation in the production cycle could easily turn to loss due to inequitable foreign exchange rates<sup>11</sup>. Innovation does not pay off in such a scenario. Moreover, high taxes on labor and low taxes on assets erode working moral.

These cognitive needs, then, reflect the typical “winner takes all” principle of the European society. Likewise, they reflect the problems of high labor costs. Working morale is hampered and knowledge-sharing efforts are diminished by macro economic factors and political hazards.

Due to statistical relevance<sup>12</sup>, it was not possible to find one single common motivator or morale hazard for the psychosocial needs.

## **5. Conclusion**

Our comprehensive online survey, combined with personal interviews, supports the business transaction theory. According to this theory, knowledge sharing is a trading process. We are aware that survey results might vary greatly from culture to culture. Group goals might indeed be scored higher than individual goals in cultures separate from Middle

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<sup>11</sup> Product export.

<sup>12</sup> The cluster analysis extracts only answers supported by more than 70% of the random sample.

Europe. However, it should be noted that goals are always linked with individual value, even those of online communities engaging in fun activities. Moreover, setting goals is a cultural independent human property. Since most of the goals can only be achieved through information sharing, it is the value of information, which plays a mayor role in the value chain. It is this piece of extracted common agreement, which makes the business transaction theory inviolable.

The knowledge sharing process and working morale is influenced by several motivators and morale hazards, which were detected during the interview phase. However, the presented results derived from the second part of the survey, namely personal interviews, are cultural dependent. These mirror a snapshot of Europe's current society.

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