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Motivation during the Financial Crisis of 2008- from a JCM Perspective

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ABSTRACT

The purpose of this thesis is to address the impact of the financial crisis of 2008 on changes in motivation, and job characteristics proposed in the Job Characteristics Model. The sample consisted of 272 subjects from different industries. Regressions and multinominal logistic regression were used to analyze the hypotheses of the study. This study has provided only partial support for the applicability of the JCM during economic crisis. Whereas dealing with others, task identity and autonomy predicted the levels of internal work motivation significantly; the other job characteristics did not lead to significant results. Other than expected GNS did not moderate the relationship between the job characteristics and motivation, however, interestingly it had a mediating role between autonomy/dealing with others and motivation. Procedural constrains did not have an effect on motivation. The results generally support the Job Characteristics Model's predictions that task variety and worker autonomy are positively associated with labor productivity. The quality of products and services on the other hand, was only associated with task variety.

ZUSAMMENFASSUNG

Das Ziel dieser Studie war es, die Effekte der Wirtschaftskrise von 2008 auf die Motivation und auf den Kerndimensionen des Job Characteristics Models zu untersuchen. Insgesamt haben 272 Teilnehmer aus verschiedenen Industrien an der Studie teilgenommen. Die Ergebnisse wurden mit Regressionen und multinominalen Regressionen ausgewertet. Die Hypothesen der Studie konnten nur teilweise bestätigt werden. Außer den Umgang mit Anderen, Autonomie und Aufgabenidentität hatten die restlichen Variablen des JCMs keinen Effekt auf die Motivation. Im Gegensatz zur Annahme des JCMs und früheren Studien die die Rolle des GNS (Zufriedenheit mit persönlichen Entfaltungsmöglichkeiten) als Moderatorvariable bestätigt haben, konnten diese Ergebnisse in dieser Studie nicht reproduziert werden. GNS fungierte als Mediatorvariable zwischen dem Umgang mit Anderen, Autonomie und Motivation. Die Verfahrungsbeschränkungen am Arbeitsplatz hatten keinen Effekt auf die Motivation. Autonomie und Anforderungswechsel hatten einen positiven Effekt auf die

Produktivität im Unternehmen. Die Qualität der Produkten/Dienstleistungen wurde nur von dem Niveau des Anforderungswechsels beeinflusst.

Motivation to conduct this study

In 2008, the "normal working environments" changed in many organizations, due to the devastating outcomes of the financial crisis. This sudden change of organizational, political and economical context generated new topics in the field of organizational research.

Recessions are, as Paul Krugman (2008) defined them "peculiar occurrences", which were mostly studied by economists, whose main goal was to develop models which would help experts and the governments to prevent economic catastrophes, such as the Great Depression. But one important aspect was left out in these highly complex economic models; namely the people themselves. Identifying factors and events that signalize economic turbulences is surely an important issue, but one should not forget that these events do not occur randomly. They are always embedded in a social context. Bank panics, higher inflation, declines in stock markets or increases in prices sometimes struck us as a surprise, but they are only a result of people behaving in a certain way. People decide whether they want to spend or safe their money, whether they want to take up a mortgage or invest in stocks; therefore they are the main driving force of economy. Most literature in economics focuses on explaining and predicting the onsets of recessions, but such research rarely considers people and their feelings, fears or behavior during unstable economic times. There is a very small body of psychological and sociological research on this topic thus, many questions still remained unanswered. We still have little scientific insight about the effects of financial crisis on psychological factors such as: motivation, job-satisfaction, working morale and many others. In this thesis, I choose to focus on motivation, mostly because it is one of the most essential prerequisites for success and effectiveness of organizations.

The purpose of the present study is (a) to test the effects of the financial crisis on motivation using the job characteristics model (b) to explore the role of growth need

satisfaction and procedural constrains as moderators between job characteristics and motivation; (c) to test all of the above relationships in a financial crisis setting.

The thesis is structured as follows: the introduction is divided into two parts, in the first part I summarized the literature about financial crisis and I linked it to issues and phenomena of psychology. The second part of the introduction is dedicated to motivation theories and literature based on studies with JCM (which is used as a theoretical basis for this study). In the hypotheses section, the assumptions and expectations of this study are explained and justified. In method section I describe the materials, procedure and sample of the study. In the subsequent section the results of the study are presented, which are then discussed in the last chapter of the thesis.

I. INTRODUCTION

1. LITERATURE REVIEW OF ECONOMIC CRISIS

1.1. The Return of Depression Economics- Why do market economies experience recessions?

"It got drunk and now it's got a hangover." This is how George W. Bush commented on the Wall Street's troubles (The Economist, 9 August 2008, as cited in Chorafas, 2009). But now the whole world has to face the consequences of their drunkenness (Akerlof & Schiller, 2009). About fifteen years ago hardly anybody expected that modern countries will have to face "bone-crushing recessions", that they will not be able to pay back debts, let alone go bankrupt. World's economy turned out into a more dangerous place, than ever expected and economists and policy makers were not ready to face it.

Sorrowful pictures of hungry children, hopeless mothers and unemployed men marching on the streets of American towns, are the only traces that people associate with the Great Depression nowadays. However, the Great Depression lead to a massive joblessness all around the world; in the U.S. unemployment reached 26%, in the United Kingdom it rose above 27%, whereas in Germany it reached a maximum of 34%. Despite of the devastating consequences, the Great Depression was quickly forgotten. At least until 2008 when America's mortgage crisis spiraled into the largest international financial shocks since the Great Depression. In the first quarter of 2009, the Brookings Institution reported an annualized GPA decline rate of 14.4% in Germany, 15.2% in Japan, 7.4% in the UK, 9.8% in the Euro area. Nevertheless, despite the financial losses and the increased unemployment rates in the last two years, a full-blown -financial collapse, as the one during the Great Depression, where one-third of the U.S. banks failed, and the unemployment rate rose to 25 percent, could have been prevented due to policy actions and bail-out packages of the governments (in Shah, 2010).

1.1.1 What are economic recessions?

What is a depression in economics and can it be prevented? In this chapter I will summarize economic literature on recessions, and give an overview of the major theories on this topic.

The National Bureau of Economic Research defines economic recession as "a significant decline in the economic activity spread across the economy, lasting more than a few months". The United States suffered its first recession back in 1797 which was primarily caused by the deflating effects of the Bank of England as they crossed the Ocean to America. Recessions continued to plague throughout the history, not only America, but the rest of the world as well. Today economic recessions are considered to be a part of the natural cycle of the modern economic system that cannot be escaped in the long run. Countries like Germany, the U.K., China, and Japan have all had trouble with recessions (Recessions.org. 2010). Recessions are peculiar occurrences, especially because economy is based on a premise that markets usually manage to match supply and demand. In times of recessions there are enough good factories, retailers and shops but there are no consumers, there are plenty good workers who are willing to works for less money, but there is a lack of jobs. In other words, there is a surplus of supply but there is no demand (see Krugman, 2009).

In his books Paul Krugman (2009), a Noble Price winning economist, uses a very simple story to demonstrate what recessions really are, and how they emerge. The original story that he uses in his works, was published in 1978, by R. Sweeney who was a member of the cooperative under the title "Monetary Theory and the Great Capitol Hill Baby-sitting Co-op Crisis". The baby-sitting co-op was a large association of 150 young couples, who were willing to baby-sit each other´s children. To ensure that all couples provided exactly as many hours of baby-sitting as received, a special coupon system was introduced. For each hour the baby-sitters received a coupon from the baby-sitees; at the end of a certain time period all couples had to have the same number of earned coupons. The co-op may seem easily manageable but it turned out that such a system required a fair amount of scrip in circulation. Couples tried to accumulate as many reserves for the future as possible, which lead to an imbalance in the system;

suddenly there were many baby-sitters but no there was a lack of baby-sitting opportunities. Consequently, the co-op fell into a recession. Certainly, the co-op did not fall into a recession because the members did a bad job, or because they lacked special "baby-sitting techniques". The problem therefore, was not the co-ops ability to produce, nor to supply the market, but simply a lack of demand. The "real economy" even of small countries is surely much more complex than the baby sitting co-op. Among many other additional factors, in real economies people do not spend money only for current pleasures; they also invest in the future. In real economies there is also a capital market in which those with spare cash can lend at certain interest rates to those who need it. But the fundamentals are the same as; a recession is normally a matter of the public as a whole trying to accumulate money (or trying to save more than they spend) (see Krugman, 2009).

Ever since the Great Depression economists and policy makers became attentive to the problems of recession in financial markets. But the focus of their concern changed through the history, since more and more factors were associated with an onset of a recession. In the subsequent sections of this thesis I would like to focus on theories and explanations of financial crisis and the change of views through time.

1.2. Theories and Explanations of Economic Crisis

1.2.1. Earlier Views of financial crisis

The collapse of the financial system during the Great Depression struck the attention of economists. New models had to be developed to prevent such catastrophic recessions in the future. The first work on financial crisis was published in the first volume of Econometrica in 1933, in which Fisher argued that the severity of the Great Depression resulted from poorly performing financial markets. In his view the economy became extremely vulnerable due to high leverage of the borrowing class in the wake of prosperity preceding 1929, which lead to a wave of bankruptcies and deflation. According to Fisher, the economy got stuck in a vicious circle; deflation redistributed wealth from debtors to creditors and lead to a decline in net worth, which in return induced borrowers to cut back on current expenditures and future investments, sending the economy further down the spiral (Gertler, 1988).

Also inspired by the devastating causes of the Great Depression, John Maynard Keynes published his masterwork called "The General Theory of Employment, Interest and Money". In his work Keynes described how creditworthy governments could borrow and spend, and thus reduce unemployment and put economy back "to work". In the 1940´s Keynesian principals for fighting recessions became fully incorporated into government policies as well as into the thinking of economists and politicians (Akerlof & Schiller, 2009). General Theory is very complex, but its main conclusions can be summarized in four bullet points:

• Economies often suffer from an overall lack of demand which usually leads to involuntary unemployment

•It is questionable if economy posses an automatic tendency to correct shortfalls in demand. If this tendency really exists, it operates slowly and painfully

• Government policies aimed at increasing demand, can reduce unemployment quickly

• Sometimes increasing the money supply won't be enough to persuade the private sector to spend more, and government spending must step into the breach

Although these points might not sound revolutionary to modern economists and policy makers, they were not only radical in times when Keynes presented them, but rather unthinkable. Over the past 70 years *The General Theory* has been a base of many economic theories and views (Krugman, 2006).

In the 1970´s theories about financial crisis were split into two opposite camps; those linked to monetarists such as Friedman and Schwarz, versus more eclectic theories such as the one proposed by Kindelberger and Minsky. Monetarists connected financial crisis with bank panics, which were viewed as the major source of contractions in money supply, that in turn have always led to severe contractions in economic activities. According to monetarists sharp declines in asset prices and business failures alone do not constitute a real financial crisis if they are not accompanied by bank panic. Without bank panics declines in economic activities are characterized as "pseudo-crisis". During pseudo-crisis government interventions are not necessary. On the contrary, they can be rather harmful because such interventions can lead to a decrease in overall economic activity since firms that actually deserve to fail receive an unnecessary

bailout (Mishkin, 1992). Kindelberger (1978) and Minsky (1972, as cited in Mishkin, 1992, p. 116) proposed a much broader definition of what constitutes a real financial crisis than the monetarists. They considered sharp declines in asset prices, failures of financial as well as nonfinancial firms, extreme inflations and disinflations or a combination of all of these factors, as "real signs" of a financial crisis, which do not necessarily have to be followed by bank crisis. They saw these disturbances as serious threats to the aggregate economy and they advocated the importance of government interventions in such times. Since they did not offer a clear definition of financial crisis their view was not considered as a valid theory, and thus it lent itself to being used too broadly as a justification for government interventions that might not always be useful for the economy. On the other hand, the monetarist view is extremely narrow because it only focuses on bank panics (Mishkin, 1992).

Another example of the early views on crisis are the so called exogenous-policy models or models of speculative attacks, pioneered by Krugman (1979, as cited in Zhu & Jiawen, 2008, p.210). The essence of these models is that currency crises are unavoidable outcomes, mostly caused by inconsistencies of economic policies. Domestic credit expansion, chronic structural imbalances such as current account deficit, domestic fiscal imbalances, or combinations of these factors cause excess demand for foreign currency and drain the country´s international reserves. When reserves are exhausted, the country will have no choice but to let go of the fixed exchange rate policy, and currency crisis become unavoidable.

The second generation of models uses a game-theory approach. These models focus on government optimization and views devaluations as a result of choosing between conflicting policy targets (Zhu & Jiawen, 2008). One of the most prominent examples of these second generation models is a stochastic model of economic crisis which is based on the ideas of of Romer (1990) and by Grossman & Helpman (1991) and was developed by Obstfeld (1994, p.1311). Her model supposes that each county can invest in two linear projects: a safe one and a risky one. However, ongoing growth depends on investments in supplying specialized, risky production inputs, because risky investments usually have higher expected returns than safe ones. Since international asset trade allows each country to hold a globally diversified portfolio of risky investments, it encourages all countries to shift from low-return, safe investments toward high-return

risky investments. Nevertheless, when all countries chose to maximize profit, and invest only in risky assets, recessions become unavoidable.

1.2.2. The most Prominent Views on Financial Crisis: The Role of Asymmetric Information and Moral Hazard

Transactions which take place in financial markets are usually based on asymmetric information, in which one party often does not have all the necessary knowledge she/he might need about the other party. Krugman (1979) was the first one to introduce incomplete knowledge on the part of investors as a predicator of a financial crisis. Incomplete knowledge leads to a higher uncertainty during decision making. For example, borrowers who take out loans often have better information about potential returns and risks associated with their own investments than the lenders. On the other hand, lenders may have more information about possible market developments and interest rates than a lay borrower who needs a mortgage for a house. Asymmetric information creates a problem in two different ways: before the transaction is entered into (adverse selection) and after the transaction is entered into (moral hazard). Adverse selection describes a problem in the financial markets which occurs when the potential borrowers who are most likely to produce undesirable outcomes, are the ones who have the highest chance of getting a credit. Adverse selection makes it more likely that loans might be given to "bad" borrowers, therefore lenders may decide not to give any loans even though there are some good investment opportunities in the marketplace (see Mishkin, 1992). This situation is a feature of the classic "lemons problem", which was described for the first time by Akerlof (1970).

In order to capture the essence of the adverse selection problem or as he defined it the "lemons problem" Akerlof uses an example with used cars. In order to simplify the explanation Akerlof suggests that cars can be divided in exactly four categories; used and new cars on one side, and good and bad cars (called "lemons" in America) on the other. A new car may be a good car or a lemon. The same is true for used cars; they can be "lemons" or in perfectly good shape. Individuals who decide to buy a car usually do not know if they will buy a good car or a lemon. But what they do know is that with a probability p the desired car is actually a good one, and with probability $(1-p)$ it may be

a lemon (p being the proportion of good cars produced and 1-p the proportion of the lemons on the market). But some people can give more accurate estimates of these probabilities than others. For example, after owning a Mercedes car dealership for years, the dealership owner can form a better idea about the quality of the certain Mercedes model, and thus he can assign a more accurate estimate of probability that the car is a lemon, than a potential buyer who never drove a Mercedes in his life. An asymmetry in available information has been developed at this point. The dealership owner has more information about the car the potential buyer. Therefore, he can sell good cars and lemons at the same price, since it is impossible for the buyer to tell a difference between a good car and a lemon, especially if the car is brand new. It is obvious that a used car cannot have the same valuation as a new car; but if it could have the same valuation, it would be advantageous to trade a lemon at the price of a new car, and buy a new car (at higher probability p that it is a good car). However, in this case most people will not buy a car at all, in order to prevent buying a lemon, and owners of good cars will want to hold on to their cars as long as they can and will not want to sell it. Therefore, most cars traded will be lemons and good cars may not be traded at all; so bad cars will drive out the good ones from the market (see Akerlof, 1970). As pointed out by Myers & Majluf (1984) a lemons problem occurs at financial markets when the lenders have trouble determining whether a lender is a good risk with a profitable investment opportunity, or if he is a bad risk with bad investment projects which has high risks.

Moral hazard in financial markets occurs when lenders are subjected to a hazard, since borrowers might engage in activities which are undesirable (immoral) from the lender´s point of view. Moral hazard is a result of asymmetric information in the financial markets. It is a result of lender´s lack of information (or in some cases control) which enables the borrower to engage in moral hazard. But moral hazard is not necessarily a result of asymmetric information; it can also occur due to high enforcement costs, which lenders have to pay to prevent moral hazard. Even when lenders learn about undesired activities of borrowers, legal costs are often too high, so it is too costly for the lender to prevent moral hazard. Moral hazard also occurs because borrowers usually have incentives to invest in projects with high risks, mostly because risky investments bring the most profit if they succeed. But if they fail, lenders have to bear most of the costs. Borrowers might also misallocate funds for their own personal

use, they can also choose to work less than required on a certain project or take unprofitable investment on purpose only to increase their own power or stature. The conflict of interest between lenders and borrowers caused by moral hazard may cause the same problems as those caused by asymmetric information; lenders can decide not to lend any money at all, and if they decide to lend they will ask high interest rates in return, thus borrowers who are most likely to produce an undesirable outcome through risky investments are the ones most likely to get a loan (see Mishkin, 1992).

Insurance companies are one of the most prominent examples of moral hazard in economy. Insurance companies profit the most when people pay to avoid risk. Their customers pay smaller amounts of money, but break even in cases of misfortunes, since insurance companies cover their losses. Therefore, insurance companies lower the costs of misfortune. Sometimes insured people become sloppier; they forget to lock doors or drive more aggressively, because they know that their insurance will cover their losses. They simply make less effort to avoid misfortune, and this change in behavior is a good example for moral hazard. For example, if a person has to pay $1000 to repair his/her car damage but insurance pays $900, the insured person has an incentive to avoid the accident. On the other hand if the accident costs the person $1000 but the insurance pays $2000, the person not only has no incentive to avoid the accident but may have an incentive to seek it out consciously (Schenk, 2007).

1.2.3. Predictors of Financial Crisis

Mishkin (1992, 1995) sees five primary factors in the economy as predictors and enhancers of moral hazard and adverse selection.

Increases in interest rates: If interest rates increase sufficiently, due to an increased demand for credits or due to a decrease in money supply, there is higher probability that lenders will lend to bad credit risks with risky investments, because good credit risks might not be willing to borrow because exceptionally high interest rates make projects less profitable, while bad credit risks might use this opportunity to get a loan even with higher interest rates. Mankiw (1986, as cited by Mishkin 1992, pp. 118) demonstrated that a small rise in the riskless interest rate can sometimes lead to a very large decrease in lending and even a possible collapse in the loan market.

Stock Market declines: Sharp stock market declines cause an increase in adverse selection and moral hazard because they lead to large declines in the market values of firm´s net worth. As a result, lenders are less willing to lend because they have less protection and certainty. Firms losing their net worth are less likely to pay back credit, so losses from loans are more likely to be severe.

Increases in uncertainty: Failures of prominent financial institutions or big non-financial organizations, stock market crashes or recessions usually cause dramatic increases in uncertainty in financial markets. The increase of uncertainty makes information more asymmetric and makes adverse selection even more severe. Similarly to scenarios with sharp stock market declines, lenders are also less willing to lend because there is very little guarantee that firms will be able to pay pack the loans.

Bank Panics: is a factor which was adopted from the Monetarists. Banks play an important role in financial markets because they reduce the adverse selection problem by becoming experts in the production of information about firms. Therefore, they are able to sort out good credit risks from bad ones. Thus, a crisis which results in bank panic or bank failure reduces the amount of financial intermediation undertaken by banks, and leads to a decrease in investments and economic activity in general.

Unanticipated decline in price level: Unanticipated decline of prices reduces the firm´s net worth in the same way as stock market declines. Debts and credits are usually fixed in nominal terms, therefore when prices decline, the burden of a firm´s debt increases instantly. A sharp drop in price levels causes a decline in the firm´s net worth and an increase in asymmetric information and moral hazard.

No doubt, that the topic of financial crisis and its triggers belong to the field of economy, but in order to really understand such crisis researchers need to use knowledge and theories of psychology. Therefore, in the next section of this work I would like to demonstrate the role of psychology in studying economic crisis.

1.3. What happened in 2008? – How Psychology Drives the Economy

Since August 2007, financial markets and the global economy have been hit by shattering developments, which were caused by mortgage crisis in the United States. Major Banks and financial institutions made negative balances in billions of dollars and Euros (Hellwig, 2008). But how could this all happen so fast? Why did experts not notice and anticipate the collapse of banks, the loss of jobs and the severity of the recession? According to Akerlof and Shiller (2009), the answer to these questions is very simple. Economists, governments and the general public had been simply reassured by an economic theory that said "we were all safe" and that nothing dangerous can happen anymore. But obviously this theory was deficient. It ignored the importance of psychology and the role of ideas in the conduct of economy. Traditional economy assumes that people think rationally and that they pursue their economic interests in a reasoned way. But it does not consider the extent to which people act irrationally and are driven by noneconomic motives, the so called "animal spirits".

The term animal spirit comes from the Latin expression "spiritus animalis" and refers to a basic mental energy. In economics the term has a somewhat different meaning; it describes a restless and inconsistent element in economy. The events of the current economic crisis cannot be explained without taking animal spirits into an account (Akerlof & Shiller 2009). Therefore, in the subsequent sections I would like to summarize the events that lead to the economic collapse by illustrating the role of animal spirits in each of these situations.

1.3.1. Animal Spirit 1. : Confidence and its Multipliers

According to the dictionary confidence refers to a "feeling or consciousness of one's powers or of reliance on one's circumstances" or a "belief that one will act in a right, proper, or effective way" (Merriam- Webster Online Dictionary). Economists have a very peculiar interpretation of confidence. Confidence is closely related to trust and belief. Their views suggest that both confidence and trust are completely rational. But the very meaning of trust is that it goes beyond rationality (Akerlof & Shiller, 2009). Trust is social and relational, rather than rational and calculative. Trust is based on a judgment of similarity between two persons, and an assumption that the person to

be trusted would act as the trusting person would (Earle, 2009). The notion of confidence and trust play a major role in economics, and are often used as synonyms (Tonkiss, 2009). Both trust and confidence influence the economy directly, because when customers feel confident they are more willing to spend their money, when confidence drops they start withdrawing their money (Akerlof & Shiller, 2009). Thus, it is possible in principle that a loss of confidence in a country can produce an economic crisis, since people stop spending and investing in the economy (Krugman, 1998).

The notion of confidence in financial markets is not a modern economic phenomenon. The term "state of confidence" was first introduced by Keynes in his General Theory and became a key factor in his investment theory. In this work, Keynes concluded that a collapse in the confidence of either borrowers or lenders was sufficient to induce a downturn or a recession. However a return to wealth required that both be in good repair (Gertler, 1988). The General Theory of Keynes was written in the 1940´s, but its principles can be applied in modern economies as well. Loss of confidence by investors and the public in the strength of key financial institutions and markets is still the major root of financial crisis and recessions. The 2008 financial crisis is no exception (Tonkiss, 2009). Like many other recessions, the 2008 crisis also began with a loss of confidence in the ability of the banking, which caused credit markets to freeze up (Dahl, 2009). When banks lack solid information about the value of other banks' assets and liabilities, they lack a basis on which to make rational decisions about lending. On the other hand, in the absence of reliable information, they cannot have confidence that the borrower will ever be in a position to repay the loan. Thus, if banks suspect that their partners conceal or lye about their capital reserves or asset values, then a failure of confidence is unavoidable (Tonkiss, 2009).

As the financial news started to report about negative developments of economic activity, the confidence of the people started dropping (Chorafas, 2008). Banks were taking on huge risks, which lead to an increased exposure to serious financial problems. When people eventually started to see problems, confidence fell quickly. As a result, lending slowed, in some cases it even ceased for a while (Shah, 2009). The S&P homebuilding index dropped from nearly 1300 in January 2007 to a miserable number of 700 a month later. Already by June 2007 US homebuilders' confidence had fallen from 75% to only 25% percent. Lennar Corp., the biggest US homebuilder, reported a

73% drop in first quarter 2007 profit, with no improvement in the second quarter, while other homebuilders faced similar or even bigger losses. Bankers, however, paid no attention to these facts. Rather than that, they focused on rate cuts by the Fed and not on the risk of falling house prices (Chorafas, 2008). Investment banks were sitting on the riskiest loans that other investors did not want. Assets were falling in value, so lenders wanted to take their money back. But the investment banks had little in deposits; therefore they collapsed quickly (Shah, 2009). Excessive debt in the banking system has been transferred to governments in an attempt to bail out the banks and restart the system. Even though governments managed to save some of the bankrupted banks, they were not able to solve the problem of the confidence loss. Actually they made the problem even worse. The loss of confidence was transferred to governments as well, since people started to doubt the ability of the governments to repay these enormous debts (Dahl, 2009). This was confirmed in a survey conducted by the Center for European Policy Studies (Roth, 2009). The data show an extreme fall of confidence in the European Central Bank during the first months of 2009. Compared to 2008, tremendous falls of confidence were measured, with eight EU countries experiencing a decrease in net trust by over 30%. The trust in the European Commission as well the European Parliament also decreased dramatically during the aftermath of the financial crisis, suggesting a transfer of the confidence loss from banks to governments.

1.3.2. Animal Spirit 2: Fairness

In economic models and theories human actors are typically portrayed as "self-interest seeking with guile (which) includes . . . more blatant forms, such as lying, stealing, and cheating . . . (but) more often involves subtle forms of deceit" (Williamson, 1985, as cited in Fehr & Gächter, 2000, p.159). However, in reality many people deviate from purely self-interested behavior and act in a reciprocal manner. Reciprocity means that in response to kind actions, people frequently act much nicer and more cooperative than predicted by the self-interest model. On the other hand, in response to hostile actions they often act against the principals of rationalism, by being crueler or more brutal, than expected. Acting in a self-interested and profit-maximizing manner is for surely advantageous for an individual, but in repeated interactions the expectations of future returns provide a more positive gain, than the short term

incentives of cheating. Therefore, acting according to the rules of reciprocity or "reciprocal fairness" pays off more on a long run (Fehr & Gächter, 2000).

Reciprocally fair people respond to friendly actions in a friendly manner, but in response to hostile actions they are willing to sacrifice resources in order to punish those who are being unkind (Rabin ,1993).Situations from everyday life provide reassuring examples indicating that people act according to principals of reciprocity and fairness more often than those of self-interest models. Well known examples are that many people pay their taxes honestly, always buy a bus ticket, get involved in charities or help a team member without asking any rewards in return (Fehr & Schmidt, 1999).

Although a large body of psychological research already demonstrated the inevitable role of fairness in economic interactions, it is still being pushed into a back channel of economic theories. But if one really wishes to understand economy, one must look at its sinister side, ruled by a lack of fairness, corruption and bad faith. In fact, most economic fluctuations and recessions can be traced to an outright of corruption and prevalence of bad faith. Each of the past economic recessions such as the recession of July 1990 to March 1991, the recession of 2001 and 2008 involved corruption scandals. The recession of 2008 was no exception. It is attributed to the mortgage scandals in the United States of America, which were partly caused by corruption and bad faith. Between 1990 and 2006 U.S. housing prices rose, and were followed by a massive increases in subprime lending from 5% to 20% (see Akerlof & Shiller, 2009). According to the publication of *Inside Mortgage Finance*, subprime home loan market peaked in 2005. In fact, between 2005 and 2007 lenders and mortgage brokers handed out $625 billion in mortgages to borrowers with low credit scores (Gandel, 2010). The subprime lenders became a major new industry, but this new business form was not properly regulated. Mortgages were pooled with other mortgages; the pools were divided, and marketed worldwide as bonds to banks, pension funds, insurance companies, hedge funds, and other entities generally known as "investors." No one really knew, or bothered to know, how much risk was embedded in these investments and how this exposure could be managed (Chorafas, 2009). Subprime lenders issued mortgages that were unsuitable for their borrowers. They advertised their low monthly payments, but concealed the extremely high interest rates. Unfortunately, they were successful in placing these loans among the most vulnerable

people; those who were the least educated and informed. These lenders did not believe in their own products, and they wanted to get rid of them as soon as possible. Thus, mortgages were sold as quickly as possible, and repacked in various different ways. Once these high-risk mortgages were put into more attractive packages, they were usually taken to rating agencies that had to put their approval on them. The agencies rated these subprime mortgages very highly; the ratings were in fact so high that they were brought into bank holding companies, insurance companies and often even into depositary banks, which would never have touched any of these mortgages on their own (see Akerlof & Shiller, 2009). Additionally, supervisory authorities did not react when the same shaky mortgages were repackaged ten to thirty times over and sold on. The Federal Reserve, the Securities and Exchange Commission (SEC), and other regulators watched this happening in the false belief that markets correct their own excesses (Chorafas, 2009).

As already mentioned, economic crisis and recessions are usually accompanied with fraud scandals, which are blatant examples of lack of fairness and bad faith. But none of the previous fraud scandals was as large and shocking as the real estate fraud committed by Bernard L. Madoff industry. Bernard L. Madoff started his carrier as a lifeguard on the beaches of Long Island, but eventually he built a trading powerhouse that had prospered for more than four decades, and brought him a lot of money. At age 70, he had become an influential spokesman for the traders and a well known broker in the real-estate market. However, on December 11, 2008, Madoff was arrested at his Manhattan home by federal agents and charged in what could be the largest fraud in Wall Street history. Madoff managed his funds by providing little information to investors but he demanded a lot of trust (Haughney, 2008). He was charged with fraud in the amount of $65 billion, but he pleaded guilty to all the federal charges filed against him, and on June 29 he was sentenced by a federal judge to the maximum prison termof 150 years (Washington, 2010). But it was not only Madoff who earned millions by fraud, much of the financial services industry has been quite similarly corrupted. The financial services industry has claimed an ever-growing share of the nation's income, making the people who run the industry very rich. Yet, the financial services industry has been destroying value, rather than creating it. The wealth achieved by those who managed other people's money had a corrupting effect on our society as a whole. In 2007 the average salary of employees in securities, commodity contracts, and

investments was more than four times the average salary in the rest of the economy. Incomes of million dollars were fairly common, while wages of ordinary workers stagnated (Krugman, 2008).

1.3.3. Animal Spirit 3: Money Illusion

Money illusion is another animal spirit which implies a lack of rationality in economy. The term *money illusion* refers to a tendency to think in terms of nominal rather than real monetary values. For example, effects of past nominal values on current purchase or sale decisions represent a form of money illusion. This could manifest itself in a reluctance to sell a house or shares of stock at a nominal loss, or in a reluctance to accept nominal wage cuts (Shafir, Diamond & Tversky, 1997). Shiller & Akerlhof (2009, p.49) use a personal experience to illustrate the problem of money illusion. During a trip on a Boston commuter train, one of the authors saw a sign stating the following: "No Smoking- General Laws Chapter 272, Sec. 43A-Punishable by imprisonment for not more than 10 days or a fine of not more than $50 or both." The denoted penalty for smoking is rather odd because a $50 dollar fine seems minimal in comparison to 10 days of imprisonment. No wonder that these fines seem completely incommensurable today, given that the law about non-smoking on trains was issued in 1968. But since then the value of the fine declined by 80%. In 1968, at 5 dollar per day rate seemed as a pretty reasonable cost of avoiding jail, but today it is laughable. Thus, the sign illustrates a typical example of money illusion, which occurs when decisions are influenced by nominal currency amounts.

Despite its prevalence in people´s decisions', money illusion has largely been ignored by economists until the 1970's. Shafin et al. (1997) provide a psychological foundation for money illusion based on their analysis of survey data. They argue that although people are generally aware of the difference between real and nominal values, they still often think of transactions predominantly in nominal terms since, compared to real quantities, the nominal quantities are much more salient. Fehr and Tyran (2001) demonstrated this in a series of experiments. Their results showed that money illusion aroused only when payoffs were presented in nominal terms to the participants, that is, when nominal terms are more salient.

Money illusion played an important role in emergence of the 2008 crisis, mostly because the housing market is particularly prone to it. Housing price changes are often unpredictable due to the inefficiency in the housing market itself. Other than that, frictions such as short-sale constraints make it difficult for professional investors to anticipate possible mispricings. The bias caused by money illusion became evident in the 2008 financial crisis as well. In the recent years housing prices have reached unprecedented heights in the U.S. as well as in most European and Scandinavian counties (Brunnermeier & Julliard, 2008). Economist Robert Shiller (2007) referred to the increases in housing values during this time as the "biggest national boom in history" (Glynn, Lunney & Huge, 2009, p.807) First talks of a "housing bubble" began to surface in 2002, yet, even as some began to worry about the increases in house prices, the market continued to grow. Frictions such as short-sale constraints made it difficult for professional investors to anticipate possible mispricings. Before 2008, the inflation was relatively low for a longer period of time; therefore monthly nominal interest payments on mortgages seemed low compared to the rent of a similar house. Housing prices therefore appeared to be cheaper, causing "naive" buyers to buy rather than rent. People simply based their decisions of whether to rent or buy a real estate on a comparison between monthly rent and monthly payment of a fixed nominal interest rate. They mistakenly assumed that real and nominal interest rates were going to move in a same pattern. Therefore, they wrongly attributed a decrease in inflation to a decline in the real interest rate and consequently underestimate the real cost of future mortgage payments (Brunnermeier & Julliard, 2008).

Combined together all of the previously described factors caused tremendous economic problems all over the world. Bail outs from governments helped to overcome the crisis and people were assured that the crisis is over. But it seems that the problems were not really fixed, since just a couple of months ago Greece declared bankruptcy, and countries like Spain and Portugal might have to do the same (Inman & Smith, 2010) The economy became very unstable all over the world, thus there is an emerging need to study people´s behavior and feelings during turbulent economic times.

1.4. Earlier Psychological Empirical Research about Financial Crisis

There is a small body of psychological and organizational research which focused on effects of financial crisis on behavior in organizations. Kuang-Jung (2001) studied the change of work schedule and its effects during a financial crisis in the Philippines. Contraindicating the hypothesis of the study, he found that a change of work schedule significantly affected the levels of job satisfaction of rank-and-file employees, since groups with changed schedules showed greater satisfaction with achievement, recognition, responsibility, growth and advancement and working conditions. They were more willing to finish the job assigned to them, because they felt more recognition from the superiors and management of their achievements and capabilities. They also gave higher ratings to the factors of security and relationship with peers. However, the same change did not elicit the same effect in the area of work stress. In respect to the difference on the level of work stress, the changed schedule employees felt more stress caused by role overload and experience a higher amount of stress than workers with unchanged schedules.

Adkins, Werbel & Farh (2001) examined job insecurity at a large state university in the U.S. during a period of extreme financial distress. They concluded that tenure status predicts job insecurity, since subjects with high tenure status experienced low levels of job insecurity even in times of financial crisis. Sufficient information on the other hand, seems to reduce experiences of job insecurity regardless of tenure status.

Aycan & Kabasakal (2006) studied the influence of social contract types (i.e., transactional vs. relational) on organizations´ responses to financial crisis in Turkey. Relational contracts pertain to open-ended relations that are nonspecific in terms of time. They are based on a high degree of mutual interdependence and require considerable investments by both employers and employees (Rousseau & Wade-Benzoni, 1994; as cited in Aycan & Kabasakal, 2006, p.472). On the other hand, transactional contracts have shorter time durations, are likely to focus on monetary exchanges, and are usually based on well-specified performance standards. The results of the study showed, that during financial crisis organizations with transactional social contacts, focused less on cost-cutting strategies in production, marketing, and financial

practices, whereas when the social contract tended to be more relational, there was less focus on cost-cutting strategies in human resource management practices (Aycan & Kabasakal 2006).

Zhu & Yang (2008) implemented a gravity model from physics to macroecnomic literature on financial crisis. They developed a variable called "psychic distance", which was based on four dimensions including geographic distance, common language, development level and common membership. They found that much of the change in investors´ expectations during a financial crisis in a particular country is related to "psychological distance", which on the other hand is not linked to any macroeconomic fundamentals. The authors concluded that countries which are perceived to be similar to the crisis county are assessed to be equally vulnerable, even if their economy booms.

Besides surveys and qualitative interviews, a small number of studies, based on Terror Management Theory, deployed experimental methods in order to explore the effects of economic threats on human behavior. The benefit of these studies is that they are not dependant on the actual economic situation because an economic threat is induced experimentally. Kasser & Sheldon (2000) studied the effects of mortality salience (MS) on the increase of extrinsic value orientation. The authors induced a financial insecurity threat, by applying MS in a sample of 60 students and found that subjects in the MS condition showed higher financial expectations for themselves in 15 years, than the members of the control group. In a second study they demonstrated that students who were exposed to MS became greedier and showed an increased consumption behavior. In a later study Sheldon & Kasser (2008) examined the effects of thee different threats on goal orientation of students and found that existential, economic as well as interpersonal threats lead to a promotion of extrinsic values vs. intrinsic ones. Other TMT studies provided further evidence of this phenomenon, by demonstrating that for people who endorse extrinsic values reminders of their own mortality usually leads to a further embracing of their worldviews (e.g. greed or materialism).

2. LITERATURE REVIEW: MOTIVATION

Motivational processes are intensively studied in social sciences, but the term itself found usage in everyday- language as well. Teachers often base grade their students according to the motivation they show in class, employers give promotions only to highly motivated workers (see Kirchler, 2008). In organizational research, work motivation has been the subject of more theories than any other topic. This is not very surprising since in today´s economy it became clear, that a motivated workplace represents an enormous competitive and strategic asset of a company (Baron, 1991, as cited in Tremblay, Blanchard, Taylor, Pelletier & Villeneuve, 2009, p. 214). Additionally, most researchers consider the motivation of employees to be a crucial and main building block in the development of effective organizational theories (Steers, Mowday & Shapiro, 2004, as cited in Tremblay et al., 2009, p.215).

The word motivation derives from the Latin term for movement (movere). Building on this notion, Atkinson defines motivation as "the contemporary (immediate) influence on direction, vigor, and persistence of action" (1964, as cited in Steers, Mowday & Shapiro, 2004, p. 379), while Vroom defines it as "a process governing choice made by persons ... among alternative forms of voluntary activity" (1964, as cited in Steers et al. 2004, p. 379). Campbell and Pritchard (1976; as cited in Steers et al. 2004, p. 379) suggest that motivation consists of dependent variable relationships that explain “the direction, amplitude, and persistence of an individual's behavior, holding constant the effects of aptitude, skill, and understanding of the task, and the constraints operating in the environment. Pinder (1998, as cited in Lathnam & Pinder, 2005, p. 486) defines work motivation as “a set of energetic forces that originate both within as well as beyond an individual’s being, to initiate work-related behavior and to determine its form, direction, intensity, and duration”. Therefore, motivation is a process which emerges through an interaction between the individual and the environment. These and many other definitions have three common denominators. They are all principally concerned with factors or events that energize, channel, and sustain human behavior over time (Steers et al. 2004).

In the subsequent sections I would like to give a historical overview of motivational theories and the effects they had on studying this phenomenon in organizations.

2.1. Early Developments in Motivation Theory

The earliest approaches to understanding human motivation originate from the time of the Greek philosophers and focus on the principle of hedonism as the main driving force of human behavior (Steers et al. 2004). Hedonism is the doctrine based on the notion of pleasure. Greek philosophers explained human behavior through hedonism; people focused on pleasure in order to avoid pain. Some philosophers advocated pursuit of immediate bodily pleasures; some took the maximization of pleasure over one's life as the good; some, such as Plato and Aristotle held that good life is the pleasantest, and that understanding pleasure would lead to the morally right conclusion (Goslig, 1998).

Hedonism was later refined and further developed in the works of philosophers like Locke, Bentham, Mill, and Helvetius. At the end of the nineteenth century, the study of motivation began to drift from the field of philosophy to the newly emerging science of psychology. Among these early models were instinct theories, such as those proposed by James, Freud, and McDougall (Steers et al. 2004). Freud reduced motives to sexual and aggressive instincts. James focused on instincts as well, but unlike Freud he identified a longer list of behavior-driving instincts that included locomotion, curiosity, sociability, fear, jealousy, and sympathy (Reiss, 2004). The instinct theory approach was replaced by the behavioral approach based on drive and reinforcement. Thorndike reduced human motivation to categories of reward and punishment. He believed that rewards strengthen responses since they lead to satisfaction; on the other hand punishments cause dissatisfaction, and weaken reactions. Hull identified four types of drives: hunger, thirst, sex, and escape from pain. Skinner advocated a philosophy of psychology, called 'scientific behaviorism', which was based on the laws of operant conditioning. Skinner believed that by appropriate patterns of conditioning one could explain all the intelligent behavior of people and animals (Flanagan & Rey, 1998). While psychologists were focusing on theoretical aspects and explanations of motivation at that time, managers were focusing on more pragmatic issues. A key

advance here was the work of Frederick Taylor and his colleagues in the scientific management movement. Coming from an industrial engineering background, Taylor (1911), focused on inefficiencies of factory production (Steers et al. 2004). Taylor was the first to make an effort to improve work efficiency of factory workers, by trying to minimize unnecessary motions and hence too much time in performing operations at a machine. He analyzed each operation which was needed to construct a product or some of its parts. Superfluous motions were eliminated from the operations, and records were kept of the performance in order to adopt standards for each operation. Taylor´s studies resulted in a faster rate of work and the introduction of rest periods (Columbia Electronic Encyclopedia, 2009).

In the 1930´s social scientists and managers began to consider the role of social influences on behavior. Researches and managers became more and more interested in group dynamic processes (Steers et al. 2004). The trigger for this shift of paradigm was the studies conducted at Western Electric Company's Hawthorne plant in Chicago, Illinois. Elton Mayo and Fritz J. Roethlisberger designed a series of studies in which they examined the effects of illumination, different pause and working patterns and work equipment on work efficacy. They realized that all of these changes in work conditions lead to a higher efficacy. They attributed these to improvements to the positive attention which was given to the experimental subjects of their studies. However these studies were criticized due to flaws in experimental design and data manipulation (McQuairre, 2004). Theories which focused exclusively on the phenomenon of motivation emerged about 20 years later. Some of these theories will be described in the following section of the thesis.

2.2. The Birth of the Content Theories

By the 1950s, several new models of work motivation emerged, which have been referred to as content theories, since their main aim was to identify factors associated with motivation (Steers et al. 2004). According to Locke (1976, as cited in Ikwukananne & Udechukwu, 2009 p.74) content theories attempt to "specify the particular needs that must be attained for an individual to be satisfied with his or her job". One of the most

prominent content theories is the `Theory of Basic Needs` from Maslow. Abraham Maslow became prominent for rebelling against psychoanalysis and the animal-centered studies in behaviorism. He proposed that psychology should focus on the entire person. Above all, Maslow believed that humans aspire to self-actualized states. Maslow eventually became one of many pioneers of the humanistic psychology revolution. What is enlightening about this revolution is that it marked the advent of applied psychology and theoretical and systematic understandings of variables that affect humans in the contemporary workplace. Maslow believed that humans aspire to self-actualized states. He further identified five basic needs that motivate individuals: psychological, safety, love or belongingness, esteem, and self-actualization (Ikwukananne & Udechukwu, 2009). According to Maslow more basic human needs must be satisfied at first; only when these are satisfied people can pursue higher-level needs. Individuals can progress to the next level of the pyramid only when their lower-level needs are met. However, when a lower level need is denied, the individual's attention can quickly shift to the denied need, which than becomes the most important priority. The most basic needs in Maslow's hierarchy are biological (physiological) needs. Examples are food, water, oxygen; things which we cannot survive without. Once these basic needs are met, people move to the next level of the hierarchy where their safety and security needs become apparent. These are highly dependent on environmental conditions; at the lowest most basic level the focus lies on prevention from physical hazard. Meeting physiological and safety needs provides the basis for personal stability, which is necessary to advance in the needs hierarchy. When personal stability is established, individuals develop a need to belong to a social structure. Belonging or social needs can be met through relationships of all kind; with single individuals, smaller groups, as well as with large groups with whom the person can identify. Individuals, who managed to satisfy their basic, stability and social needs, strive to achieve a comfortable level of self-confidence. The level of self-confidence depends on several factors such as: satisfaction with one´s achievement, confidence level, respect, and status within the group. The highest need of the pyramid is the tendency toward self-actualization. At this level in the hierarchy, individuals are attaining all of what they feel they are capable of becoming; thus, they have reached the peak of their potential (Urwiler & Frolick, 2008).

A second content theory of the same era, first introduced by Murray (1938) but fully developed by McClelland (1961, 1971), ignored the concept of a hierarchy and focused instead on the motivational potency of an group of distinct and clearly defined needs, including achievement, affiliation, power, and autonomy (Steers et al. 2004). McClelland´s theory is closely associated with learning concepts. The theory proposes that strong needs motivate people to use behaviors which lead to the satisfaction of the activated need. These needs are not inborn (such as the basic needs proposed by Maslow), but learned through coping with one´s environment (Pardee, 1990). Initially, McClelland focused only on the behavior and characteristics of individuals with high achievement needs, but a couple of years later he developed an interest for "power"; another factor closely related to motivation. He has dichotomized power into two dimensions; socialized power and personal power. Socialized power (e.g. influencing others for the sake of a certain social group, or organizational goals) has been found to be a characteristic of effective managers. The negative side of socialized power has been related to aggressive and dominant behavior (e.g., fighting, sexual conquest, and excessive drinking (Harrel & Stahl, 1981). Affiliation includes behaviors that are cooperative and friendly toward others. Persons with lower affiliation levels tend to be loners and introverts, and they prefer having closer relationships only with a small number of people. Those with stronger affiliation needs prefer harmonious relationships with their social group. In work relationships it is important to maintain a balance between the two opposite poles of affiliation. Effective managers should have a moderate affiliation need, since string needs often lead to biased decisions, which promote favoritism and confusion among the employees (Swenson, 2000).

While Maslow and McClelland focused on the role of individual differences in motivation, Herzberg wanted to understand how work activities and the nature of one's job influence motivation and performance (Steers et al. 2004). Unlike Maslow, Herzberg argues in his motivation-hygiene theory that job satisfaction and job dissatisfaction result from different causes. Motivators are the satisfying events such as achievement, recognition, work itself, responsibility, advancement, and growth. Hygiene factors are: policy and administration, supervision, relationship with supervisor, work conditions, salary, relationships with peers, personal life, and relationships with subordinates, status, and security. Herzberg classified these ten events as hygiene factors and he categorized them as primarily disruptions in the external work

context, while the motivators dealt with internal states of mind. Furthermore, feelings of satisfaction and dissatisfaction are not opposites of each other. Thus the opposite of "job satisfaction" is not "job dissatisfaction", but rather "no job satisfaction". For example, if an employee did experience any recognition or a sense of achievement this would not lead to job dissatisfaction, but he/she was unlikely to be motivated either (Smerek & Peterson, 2007).

Later on Hackman and Oldham (1976) and others have extended this line of research as it relates to work design, motivation, and job performance, while others, including Deci (1975; Ryan & Deci, 2000), have articulated theories focusing specifically on task-based intrinsic versus extrinsic factors (Steer et al. 2004).

I used the Job Characteristic Model from Hackman and Oldham as a basis for this study, thus the model will be discussed in more detail in the "Hypothesis" chapter.

2.3. The Golden Age of Motivation Theories- The Area of Process Theories

Beginning in the mid 1960s, a new approach to the study of work motivation emerged, which focused on defining the processes underlying work motivation. Process theories contrast the earlier views of the content theories, which focused on identifying factors associated with motivation in a relatively static environment. Process theorists on the other hand, chose a completely different approach; they viewed work motivation from a dynamic perspective and looked for causal relationships across time and events. The fundament of the process theory research were cognitive theories of motivation which attempted to understand the thought processes that people go through in determining how to behave in the workplace. The process theory movement led to boom of motivation research. Never before and, never since has so much progress been made in explaining motivation in organizations (Steers et al., 2004).

One of the best known cognitive theories is expectancy (or expectancy-valence) theory of Vroom. Expectancy theory derives from the early work of Lewin (1938) and Tolman (1959), who saw behavior as purposeful, goal directed, and largely based on conscious intentions (Steers et al., 2004). Expectancy theory is a complex approach based on hedonism. The theory proposes that a person's beliefs about expectancies,

instrumentalities and valences interact and they create a motivational force which causes people to act in ways to bring pleasure or to avoid pain. According to Vroom motivation is a function of the expectancy or probability that self-effort will achieve a certain level of performance, and that levels of performance will be instrumental in their receiving rewards or outcomes for which they have a certain valence (Pearson &Tang Yin Hui, 2001).

These factors can be expressed in the following equation:

$$\text{Motivation} = E \times I \times V$$

where,

E= Expectancy
I =Instrumentality, and
V =Valence

According to Vroom (1964) valence is "all possible affective orientations toward outcomes, and it is interpreted as the importance, attractiveness, desirability, or anticipated satisfaction with outcomes (Van Eerde & Thierry, 1975, p.576). Instrumentality is an outcome association, and it is interpreted as a relationship between several possible outcomes and a probability to obtain a certain outcome. Expectancy is "a subjective probability of an action or effort leading to an outcome or performance" (Van Eerde & Thierry, 1975, p.576). Expectancy can be measured as the perceived relation or correlation between an action and an outcome. In addition, expectancy has been interpreted as the subjective probability that effort leads to the outcome of performance or second-level outcome. Vroom argued employees tend to rationally evaluate various work related behaviors (e.g., working harder) and then choose those behaviors they believe will lead to their most valued work-related rewards and outcomes (e.g. a raise). Thus, the attractiveness of a certain action and the energy invested in it, will depend on the extent to which the employee believes its accomplishment will lead to valued outcomes. Porter and Lawler (1968, as cited in Steers et al., 2004, p. 382) expanded Vroom's initial work by incorporating a feedback loop into the model which considers learning of employees about past relationships. That is, if an outstanding performance in the past failed to lead to superior rewards,

employees will not put so much effort into similar tasks in the future, because they do not expect them to lead to sufficient rewards.

The expectancy theory motivated further research and development of several process theories. Adams (1963, as cited in Steers et al., 2004, p. 382), for example, developed the equity theory to explain how employees respond both cognitively and behaviorally to perceived unfairness in the workplace. Equity theory is based on exchange, dissonance, and social comparison theories, since it also makes predictions about how individuals manage their relationships with others. Four propositions capture the objectives of the theory:

1. Individuals evaluate their relationships with others by assessing the ratio of their outcomes (A) and inputs (A) with the outcome/input (B) ratio of a comparison other.
2. If the outcome/input ratios of the individual and comparison other are perceived to be unequal, then inequity arises.
3. The greater the inequity the individual perceives (in the form of either over reward or under reward), the more distress the individual feels.
4. The greater the distress, the harder an individual needs to work to restore equity and, thus, reduce the distress. Equity restoration techniques include altering or cognitively distorting inputs or outcomes, acting on or changing the comparison other, or terminating the relationship (Huseman, Hatfield, & Miles, 1987).

$$\frac{\text{Outcomes}_A}{\text{Inputs}_A} = \frac{\text{Outcomes}_B}{\text{Inputs}_B}$$

http://www.fsc.yorku.ca/york/istheory/wiki/images/2/21/Equity1.JPG [21.03.2010]

Goal-setting theory also emerged in the late 1960s, as researchers began to discover that specifying targets for behavior increased performance (Locke, 1968, 1996; Steers & Porter, 1974, as cited in Steers et al., 2004, p. 382). Goal setting is a cognitive theory of motivation based on the premise that people have needs that can be also described as specific outcomes or goals they hope to obtain. According to the theory, goals have two primary attributes or dimensions: content and intensity. Goal content describes features of the goals themselves (e.g. the difficulty and specificity of the goal). Goal intensity

refers to the process by which a goal is set and accomplished (e.g. individual commitment and the cognitive processes involved in attaining and setting goals). Both goal content and intensity influence task performance. Most research on goal content focused on the relationship between goal difficulty and performance; suggesting that given a sufficient level of ability and commitment, harder goals will lead to greater effort and performance than easier goals. Another well-researched area based on the goal setting theory is the participation in the goal setting process and its effect on performance. But these findings are usually less consistent than the ones about goal content (Locke & Latham, 1990, as cited in Yearta, Maitlis & Briner, 1995, p. 238).

2.4. Job Characteristics Model (JCM)

The origin of the JCM proposed by Hackman and Oldham was influenced by Herzberg's theory. JCM argues that the motivation to work is a function of three critical psychological states; "the experienced meaningfulness of the work, experienced responsibility for outcomes of the work and knowledge of the actual results of the work activities" (Thapelo, 2007, p. 58). Besides internal motivation Hackman and Oldham proposed other positive and organizational wok outcomes such as: high work satisfaction, lower absenteeism and high-quality performance**.** For the realization of positive outcomes at the workplace all three critical psychological states need to fulfilled. The three critical states are created by the five "core" job dimensions. Experienced meaningfulness of one's work is primarily influenced by the core dimensions: Skill Variety, Task Identity and Task Significance. The responsibility for the work outcomes is enhanced by sufficient levels of Autonomy at the workplace. Knowledge of results is influenced by Feedback; people are able to learn more about their jobs if they receive constant feedback from their supervisors and colleagues (Hackman and Oldham, 1975). Definitions and examples of the core dimensions are summarized in Table 1.based on (Thapelo, 2007, p. 58).

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TABLE 1. : DEFINITIONS OF THE CORE DIMENSIONS OF JCM WITH EXAMPLES

Dimension	Definition	Example
Task variety	"The degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills of the employee"	High-the owner-operator of a garage who does electrical repairs, rebuilds engines, does the financial work and interacts with customers Low-a body shop owner who sprays paint eight hours a day
Task Identity	"The degree to which the job requires completion of a whole and identifiable piece of work-e.g. doing a job from beginning to the end with a visible outcome"	High-a cabinet maker who designs a piece of furniture, selects the wood, builds the object and finishes it to perfection Low-a worker in a furniture factory who operates a lathe solely to make table legs
Autonomy	"The degree to which the job provides a substantial freedom, independence and discretion of the employee in scheduling the work determining the procedures to be used in carrying it out"	High-telephone installer who schedules her own work for the day, makes visits without supervision and decides on the most effective techniques for a particular installation Low-a telephone operator who must handle calls as they come according to a routine, highly specified procedure

Dimension	Definition	Example
Feedback	"The degree to which carrying out the work activities required by the job results in the employee obtaining direct and clear information about the effectiveness of his/her performance"	High-an electronics factory worker who assembles a radio and then tests it to determine if it operates properly Low-an electronics factory worker who assembles a radio and then route it to a quality control inspector who tests it for proper operation and makes needed adjustments
Friendship opportunities	"The degree to which a job allows employees to talk with one another on the job and to establish informal relationships with other employees at work"	High-a researcher who works closely with a team of people his age and educational background Low- security guard working the night shift alone
Dealing with others	"The degree to which a job requires employees to deal with other people to complete the work."	High- team manager who needs to work closely with his own team as well as with other departments of the company Low-freelance software developer who works from home

2.4.1. Affective Reactions to the job: Positive personal outcomes

The first personal outcome proposed by the model is *internal work motivation.* It is defined as:" the degree to which the employee is self-motivated to perform effectively on the job - i.e. The employee experiences positive internal feelings when working effectively on the job, and negative internal feelings when doing poorly" (Hackman and Oldham, 1975, p.160). The concept of internal work motivation is important because it provides a link between effective performance and self-administered affective rewards. An internally motivated person experiences positive feelings when he or she performs effectively (Cleave, 1993).

Being the second personal outcome *General Satisfaction* is defined as; "an overall measure of the degree to which the employee is satisfied and happy with the job" (Hackman and Oldham, 1975, p.160). Besides general satisfaction, the fulfillment of critical psychological states causes specific satisfactions with: job security, pay, peers and co-workers and supervision as well.

Further studies on JCM identified additional positive personal outcomes such as low absenteeism and higher work performance; however these were not included in the original model.

Finally, Hackman and Oldham noted that differences among individuals may influence or moderate the way they react to their jobs. They suggested that the most important of these individual differences (treated as moderators in the model) were the individual's growth need strength (Cleave, 1993). Growth need strength (GNS) is the "respondent´s desire to obtain growth satisfactions from his or her work" (Hackman and Oldham, 1975, p.161). Studies and research about the effects GNS will be summarized in the chapter about hypotheses.

Before developing the JDS (Job Diagnostic Survey) with Oldham, Hackman worked with on the JCM with Lawler (1971). In this pre-version of the model they identified two additional dimensions, "dealing with others" and "friendship opportunities", which were not viewed as centrally related to the positive job outcomes, but were included in order to allow the exploration of the impact of the interpersonal characteristics of job design (Sims, Szilagyi & Keller, 1976). These construct were defined as:

Dealing with Others—is the degree to which a job requires employees to deal with other people to complete the work.

Friendship Opportunities—is degree to which a job allows employees to talk with one another on the job and to establish informal relationships with other employees at work (Hackman and Lawler 1971, as cited in Sims et al., 1976, p.197

2.4.2. The validity of JCM

JDS initiated numerous research projects and studies. In fact, Perry, Mesch and Paarlberg (2006, as cited in Boonzaier, 2008, p. 1) reviewed 2616 research articles on employee motivation most recent developments in work design were based on the Job Characteristics Model. Nevertheless, previous scientific studies on JCM lead to inconsistent results.

The five factor structure of the JCM was confirmed in studies from Boonzaier (2001) and Buys, Olchers and Schaap (2002) in South African firms. Confirmation of the original factor structure was also found with employees of the public sector (Lee & Klein, 1982), seasonal hotel workers (Lee-Ross, 1998) managers (Johns, Xie & Fang 1992). However, numerous studies failed to find support for the five-factor structure. Dunham (1976, as cited in Hunter, 2006, p.24) reexamined the factor structure in a study with a sample of over 3,000 employees in a merchandising corporation. The found that 83% of the explained variance was accounted for by a single factor, which he called "job-complexity". He repeated the study with a series of different samples and organizations. The five-factor solution proposed by Hackman and Oldham was confirmed for only two of the 20 samples investigated.

In an attempt to develop a more reliable measure of the JCM Sims et al. (1976) used the original model of Hackman & Lawler (1971) which did not include the job characteristic *task significance*, but took two additional interpersonal job characteristics (*friendship opportunities and dealing with others*) into consideration. Using this model with a sample of medical and technical professionals the authors confirmed a six-factor structure of the data. Using a sample of 210 nurses and the Job Characteristics Inventory

of Sims et al. (1976) Brief & Aldag (1978) confirmed the six-factor structure as well.

In some studies the problem of the factor structure was traced back to the reverse items of the JDS. Such items were included in the original scale deliberately, to minimize response bias. To solve this problem, Harvey, Billings and Nilan (1985, as cited in Buys et al, 2007, p 33) recommended rewriting of the reversed items. This suggestion was applied and retested by Idaszak and Drasgow (1987). By reversing the items the authors were able to replicate the five-factor structure proposed by Hackman and Oldham's. Cordery & Sevastos (1993) surveyed 3,044 public sector employees and they succeeded in replicating the five-factor structure by revising the JDS and using only positively worded items. Kulik, Oldham and Langer (1988) argued that these suggestions for reversing all items were premature. They found that the revised items provided better measures of variety, significance and identity than the original JDS items, but did not substantially improve the measurement of autonomy and feedback. In a further study Idaszak, Bottom and Drasgrow (1988) were not able to replicate their initial study and prove Kulik, Oldham and Langer (1988) wrong. Idaszak and his colleagues (1988) conducted another quality assessment study of the JDS, and found completely contradictory factor-structures for the different sample types used in the study. By doing the analysis with the overall sample the five-factor was replicated. However, the analysis based on the sample type lead to a three-, four-, five as well as a six-factor solution. Kulik et al. (1988) suggested to add more reliable items to the JDS, rather than reversing the existing ones. Additionally, Burke (1999, as cited in Hunter, 2006, p.25) believes that the need to screen for invalid responses (e.g., carelessness or low comprehension) is of greater importance than the rewording of negative items.

Further feasible causes for these different findings include the moderating effects of age and education (e.g., Fried & Ferris, 1986; as cited in Hunter, 2006, p. 24). However, Cordery & Sevastos (1993) found no evidence for the effect of education level. Dunham et al. (1977, as cited in Hunter, 2006, p.24) suggested to explore the role of organizational and individual characteristics as moderating variables in the model.The inconsistencies regarding the factor-structure of the JCM were also linked to the type of the questionnaires deployed in previous research. Most research on JCM relies on self-reports, which are vulnerable to common method variance[1] (Campbell & Fiske, 1959, as

[1]Common methods variance biases occur when systematic variance associated with the method(s) confounds the

cited in Doty & Glick, 1998, p. 376). In order to avoid this problem Farh and Wong (1986, as cited in Thapelo, 2007, p. 58) recommend the use of multiple sources of information on job characteristics. However, Cellar, Kernan and Barrett (1985,as cited in Thapelo, 2007, p. 58) question the validity of external ratings by showing that observers´ ratings usually tend to be biased.

systematic variance associated with the traits. Common methods variance can either inflate or deflate the empirical estimates of the true relationship (Campbell & O´Connell, 1982; Fiske, 1982; as cited in Doty & Glick, 1998, p.376).

II. EMPIRICAL PART

3. HYPOTHESES

Before describing the hypotheses of this study I would like to explain why I used JCM as a theoretical basis of this study. The focus on the JCM is driven by two considerations. First, JCM is one of the most frequently studied models is organizational behavior, however, the results of previous empirical analysis are not consistent. Furthermore, even if the JCM was supported in numerous earlier studies, it is questionable if the model can be declared as fully validated. Second, working conditions have changed dramatically since the 1970s when the model was developed. Modern organizations became more flexible, they have a flatter hierarchical structure and they experienced a shift in workforce composition. All these changes have an impact on how work is performed and perceived. Thus, even if JCM had been validated by several researchers in the 1980s, to remain relevant it needs to be tested with data from modern work environments (see DeVaro, 2007).

There is a waste body of literature which examined the relationship between job characteristics and positive outcomes, such as internal work motivation, job satisfaction and job performance. Lee Ross (1998) conducted a study with hotel workers to determine the relationship between job characteristics and internal wok motivation, finding significant positive correlations for each job characteristic and motivation (r = .41 for autonomy*;* r = .41 for task variety; r = .34 for feedback; r = .47 for task significance). Nevertheless, she found no support for the relationship between task identity and internal work motivation. In a study conducted with physical education administrators Cleave (1993) found significant positive correlations between internal work motivation and task identity (r = .14) task significance (r = .17) as well as feedback (r = .15). However, the correlation between internal work motivation and autonomy and task variety was not significant. Using causal modeling analysis Renn & Vandenberg (1998) found strong support for the JCM. In their study conducted with 90 policy processing and customer service employees, the core job dimensions had strong direct and indirect effects on all personal work outcomes proposed in the model (internal work motivation, job satisfaction and growth satisfaction).

In the first version of JCM Hackman & Lawler (1971) did not include task significance as a job characteristic. However, they identified two additional job dimensions called “dealing with others” and “friendship opportunities”. Although Sims et al. (1976) Hackman & Lawler (1971) proved that these variables influence positive work outcomes significantly, these construct were rarely included in JCM studies. Rather than using the classical JCM (Hackman and Oldham, 1975) as an underlying model, I would like to apply the first version of JCM by Hackman & Lawler (1971) that includes “dealing with others” and “friendship opportunities“ and excludes “task significance” for the following reasons:

1. Questions regarding task significance seem rather inappropriate for describing jobs characteristics of the sample targeted for this study, mostly due to the nature of the questions used to measure this variable. In order to assess task significance Hackman and Oldham (1975) ask subjects to rate the extent to which their job influenced other people´s lives. They use questions such as: “In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?” or “My work is important for the lives and well-being of other people,” Obviously, today these questions apply only to a limited number of jobs, such as: a nurse or a doctor whose work affects lives of many people, but they are not really relevant for people working in sales or an IT department.

2. Friendship opportunities and the possibility to interact with others can be viewed as forms of social support or interaction. These two variables might play an import role in overcoming crisis. Previous studies already proved the role of social support in overcoming crisis in organizations (Chisholm, Kasl, & Mueller, 1985), personal crisis (Hobfoll, Nadler, Leiberman, 1986; Schwarzer, Hahn, et al., 1994), as well as health crisis (Coleman, Iso-Ahola, 1993; Neuling &. Winefield , 1988). Thus, it can be assumed that social support influences motivation of employees during the crisis.

3. Job Characteristics Inventory (JCI) developed by Sims et al. (1976) which is based on the original model of Hackman & Lawler (1971) is superior to the Job Diagnostic Survey due to its better internal reliability.

As mentioned above the JCM was already tested with numerous different samples such as; employees in organizations (Boonzaier ,2001;Buys et al., 2002), employees of

the public sector (Lee & Klein, 1982),seasonal hotel workers (Lee-Ross, 1998) managers (Johns, Xie & Fang 1992), technical professional working in teams (Hunter, 2006). But it was never tested in times of financial crisis. Therefore I would like to test the following hypothesis in this study:

Hypothesis 1: Job characteristics factors (autonomy, feedback, task identity, task variety, friendship opportunities and dealing with others) will significantly and positively predict levels of internal work motivation in organizations during the financial crisis.

Hackman & Oldham (1975) suggest that employees' reactions to job characteristics and to psychological states are moderated by the strength of their needs for personal growth and accomplishment at work (i.e. GNS), and satisfaction with contextual aspects of their work environment (e.g. satisfaction with payments and benefits, job security, satisfaction with co-workers, and supervisors). The linkage between job characteristics, psychological states, and work outcomes as specified by the JCM was supported by some studies. Fried & Ferris (1987) found week correlations (r=.10) between the motivation potential score and performance among subjects with low GNS. However, the correlation between these variables among the high GNS subjects was much higher (r=.45). This implies that GNS moderates the linkage between job characteristics and work outcomes. In an earlier study Arnold & House (1980) also found a significant moderating effect of GNS.

Nevertheless, numerous studies found only weak support for moderating effects of GNS. Using the Baron and Kenny's (1986) approach for examining mediation Renn & Vandenberg (1995) were not able to confirm the mediating effects of GNS. In a study with penitentiary guards Maillet (1984, as cited in Hunter, 2006, p.29) found only a weak moderator effect of GNS between job characteristics and job performance. On the other hand, Wall and Clegg (1981, as cited in Hunter, 2006, p.29) failed to find evidence of GNS serving as a moderator between job characteristics and intrinsic motivation. These findings have led some researchers to advocate either eliminating GNS and context satisfactions from further consideration as moderators (e.g. Kulik, Oldham & Langner, 1988) or to reformulate the JCM in general (Graen et al., 1986, as cited in Tiegs,Tetrick & Fried, 1992, p.576). These contradictory results call for further

research. Therefore, I would like to examine the role of GNS as a moderator in this study as well. I hypothesize the following:

Hypothesis 2: Growth need strength (GNS) will moderate the relationships between each job characteristic and internal work motivation.

Hackman & Oldham (1975) proposed other moderator variables such satisfaction with payments and benefits, job security, satisfaction with co-workers, and supervisors in the Job Characteristics Model. Yet, most studies failed to confirm their role as moderators (Abdel-Halim, 1979; Champoux, 1981; Ferris & Gilmore, 1984; Hunt, Head & Sorensen, 1982; as cited in Hunter, 2006, p.30). Therefore, these variables were not examined in this study.

It may seem logical that working in times of economic turbulences and harsh working conditions may lead to negative emotional reactions and hostility among employees. Yet, there is very little work focusing on the effects of procedural constrains on positive work outcomes. Wright (2004) incorporated procedural constrains as an additional variable in the goal setting theory, and found significant indirect effects on work motivation. However, procedural constrains were never linked to the JCM. Thus, I would like to examine the following:

H3: Procedural constrains will moderate the relationships between each job characteristic and work motivation in times of crisis. Employees experiencing more procedural constrains will be less motivated than those faced with less procedural constrains.

Since its inception in the mid 1970s, the JCM has undergone considerable empirical examination. Other than examining the validity of JCM, numerous studies focused on the relationships between the core job characteristics and job performance (e.g. Boonzaier et al., 2001; Hackman and Oldham, 1976; Hackman et al., 1978; Kemp and Cook, 1983; Parker and Wall, 1998; Parker et al., 2001; Umstot et al.,1976; as cited in DeVaro, Li & Brookshire, 2007, p.987). Nonetheless, the results of these studies are ambiguous. Using the WERS scale (Workplace Employee Relations Survey) DeVerao et al. (2007) found support for the predictions of the Job Characteristics Model that task variety and worker autonomy are positively associated with labor productivity and product quality. However, the other job characteristics such as feedback, task identity

and task significance did not influence labor productivity and product quality. Using items taken from WERS scale, I would like to reexamine this result:

Hypothesis 4a: There will be a positive relationship between the core job characteristic 'task variety' and the organization's level of labor productivity relative to the industry average, and the organization's level of product (or service) quality relative to the industry average.

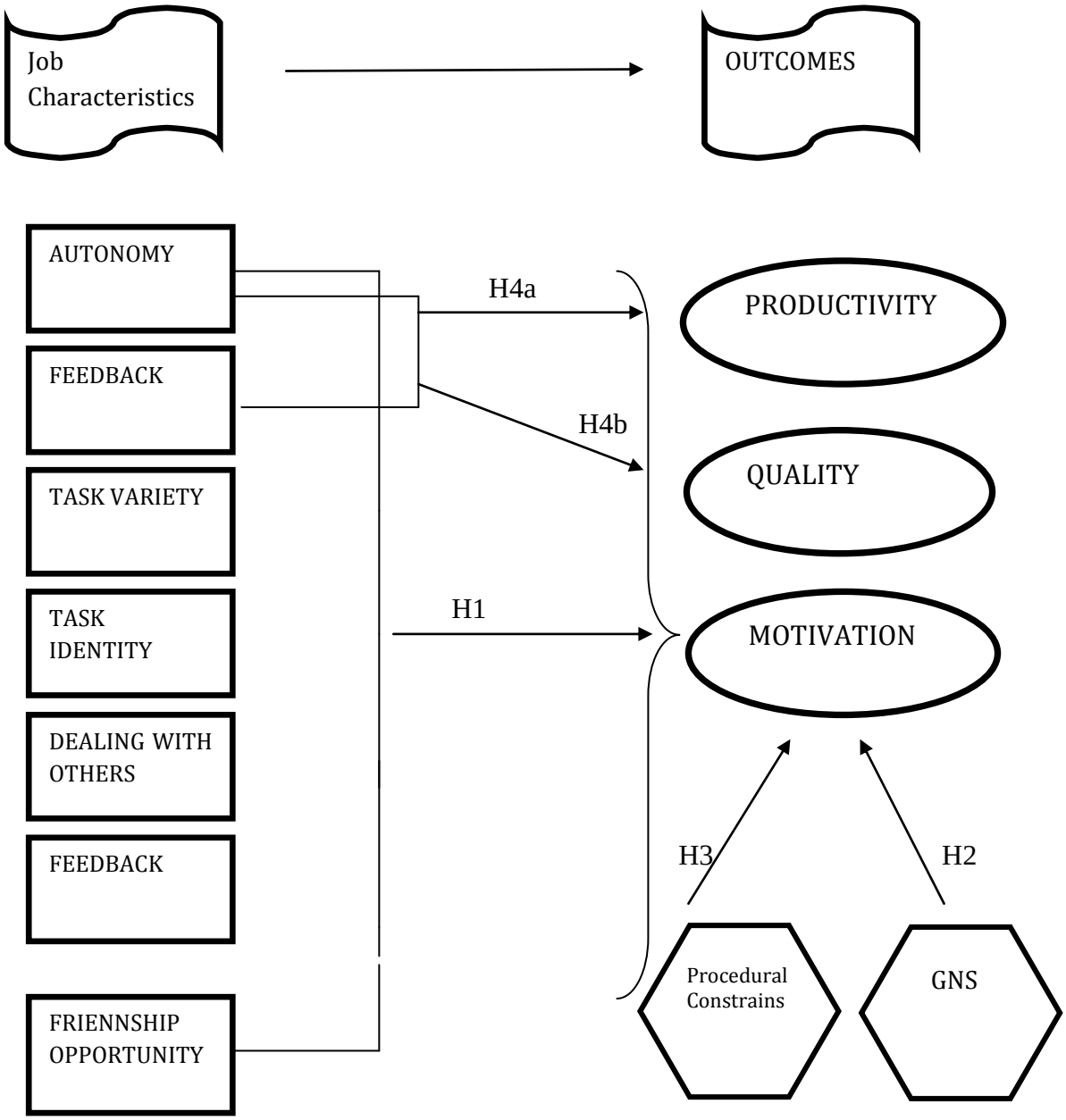
Hypothesis 4b: There will be a positive relationship between the core job characteristic 'autonomy' and organization's level of labor productivity relative to the industry average and the organization's level of product (or service) quality relative to the industry average.

One major drawback of this study is that subjects were asked to answer questions about past events. This could have altered the results, for several reasons; such as the lack of detailed memory about past events, the influence of situational and working climate, and many others. In order to reduce this bias, I would like to compare the answers of subjects who answered the survey about the financial crisis in the past, with scores of people who work in companies which are experiencing crisis currently. In order to prove the validity of the JCM in both samples the following has to be true:

H5: There will be no significant differences between the scores of subjects who answered the survey retrospectively and those who work in firms which are currently experiencing financial crisis. (Both JCM models will have the same predictor variables).

All Hypotheses are summarized in Figure 1.

FIGURE 1: SUMMARY OF THE HYPOTHESES



4. METHOD

This chapter provides an overview of the methodology. It summarizes the instruments used in the survey and it describes the procedure and sample in detail.

4.1. Sample

344 subjects were included in the initial sample of this study. Subjects who were not employed during the crisis or did not have a long-term employment contract (e.g. freelancers) were excluded from the sample. Subjects without long-term employment contracts were excluded because it can be assumed that they lack full information about the workplace which was necessary prerequisite for the participation in this study. A total of 71 cases were dropped, reducing the sample size to 272 (118 females and 154 males). The subjects had a mean age of 33.9 (*SD*=9.02) Most subjects (85.7%) were able to keep their job during the crisis. The educational level of the sample was very high; 92. 6 % of the participants had a university degree, 2.2 % a PhD and only 5.1% had no university degree. The second sample used in this study consisted of employees who work in firms which are currently facing financial problems. Having only 19 subjects, this sample was too small to be analyzed. Therefore, hypothesis 6 could have not been tested, and it was excluded from further analysis. Demographic data is summarized in Table 2.

TABLE 2: SUMMARY OF THE MAIN DEMOGRAPHIC DATA

Variable	Frequency	%
Sex		
Female	118	43.4
Male	154	56.6
Education		
No university	14	5.1
University degree	252	92.6
PhD	6	2.2
Keeping the job during the crisis		
YES	233	85.7
NO	39	14.3
Industry		
IT/Engineering	144	52.9
Automobile	14	5.1
Advertising/Media	12	4.4
Consulting	14	5.1
Finance	20	7.4
Sales	59	21.7
Other	9	3.3
Income		
Less than 1500	18	6.6
1500-2000	75	27.7
2000-2500	83	30.6
2500-3000	52	19.2
3000-3500	21	7.7
3500-4000	12	4.4
More than 4000	10	3.7

4.2. Measures

While the JDS is the most frequently used instrument for the measurement of job characteristics, at least two other self-report questionnaires are available: The Yale Job Inventory (YJI), developed by Hackman and Lawler (1971), and the currently more popular Job Characteristics Inventory (JCI), developed by Sims, Szilagyi, and Keller (1976)(Fried & Ferris, 1987). In this study the JCI was used to measure the job characteristics due to its better internal reliability. Internal work motivation and GNS were measured with the JDS. For each job characteristic, a 5-point Likert-type scale was used. Depending on the wording of the item, the Likert scale wording ranged from *1 = very little to 5 = very much, or 1 = a minimum amount to 5 = a maximum amount.* Procedural constrains (assed with items developed by Wright, 2004) and work motivation (JDS) were also measured with a 5-point Likert-scale which ranged *1=disagree strongly to 5=agree strongly*. For the GNS items subjects had to indicate whether they wanted to have only a moderate amount of a certain job aspect *(1)*, or if they wanted to have it extremely much *(5).* Labor productivity and quality of work and products was measured with 2 items taken from the WERS (Workplace Employment Relation Survey) scale. Subject were asked to rate the performance of their company and the quality of their products/service in relation to other firms in the same industry based on the following values: *1= a lot below average, 2=in average, 3= a lot better than average, 0= I don´t know or I don´t have enough information in order to make a judgment*. Self-developed items were included to measure demographics of the sample.
None of these scales were designed for crisis scenarios exclusively; so subjects were always instructed to refer to their work situation during the crisis and not to their current job circumstances. (All questions are included in the Appendix).

4.3. Procedure

Four months before the study was launched, emails clarifying the goal of the study were sent out to targeted companies. 7 companies agreed to participate in exchange for feedback of the results. The companies which agreed to participate in this study represent the following industries: IT/Engineering (4); Energy- Petroleum refining (only the sales department) (1), Media/Advertising (1), Finance/Consulting (1). In addition to targeted companies, the survey was sent out to employed acquaintances working in Austria or Germany.

Companies which are currently facing financial difficulties were recruited though acquaintances. However, from the 5 targeted companies only one company agreed to participate.

The online survey was created in HTML, and distributed through mailing lists. In companies that did not have a centralized mailing list the management distributed the survey internally. Since mailing lists were used as a main distribution channel, a precise measure of the response rate is not available. All participants were informed about the aims of the study, the voluntary nature of the survey and were assured that all answers will be treated confidentially.

5. RESULTS

This chapter is structured as follows: In the first part the results of the descriptive statistics will be summarized, followed by outcomes of the regression analysis and additional results. In the main part of the chapter the results of the hypothesis tests will be presented.

5.1. Descriptive Statistics

All statistical evaluations were conducted using the statistical programming software R (R Development Core Team, 2008). The means and the standard deviations of each job characteristic are summarized in Table 3. These values are compared with those found by Sims et al. (1976).

TABLE 3: MEAN AND THE STANDARD DEVIATION OF EACH JOB CHARACTERISTIC AND VALUES FOUND BY SIMS et al. 1976

Variable	**Current Study** M (*SD*)	**Sims et al. (1976)** M(*SD*)
Variety	2.59 *(0.93)*	2.92 *(0.90)*
Autonomy	2.98 *(0.91)*	3.72 *(0.83)*
Feedback	3.03 *(0.98)*	3.03 *(1.05)*
Task Identity	3.03 *(0.88)*	4.01 *(0.95)*
Dealing with Others	3.11 *(0.90)*	4.14 *(0.98)*
Friendship Opportunities	3.01 *(1.03)*	3.60 *(0.96)*

The mean values of most job characteristics were significantly lower than the means found by Sims et al. (1976). With the exception of feedback, all job

characteristics were rated significantly lower. The highest difference was found on the variable dealing with others followed by task identity, autonomy, friendship opportunities and task variety. The mean of the four motivation items (assessed with JDS (Hackman & Oldham, 1975). Was *M*= 3.46 (*SD*=0.75). The means of GNS and procedural constrains were *M*=3.44 (*SD*=0.95) and *M*=2.53 (*SD*=1.03) respectively.

151 (55.5%) subjects rated the productivity of their organization as average, 85 (31.3%) believed that they were more productive than the average, whilst 21 (7.7%) thought that they were worse than the industry's average, another 14 (5.1%) were not able to give any estimation about. With (131; 48.2%) the proportion of subjects who believed that their company´s products (or service) was superior to competitors was surprisingly high. 101 (37.9%) stated that the products (service) they offer is in average, while only 18 (6.6%) rated their company´s product quality as below average. 20 subjects were not able to estimate the quality of the products (or service) they offer. (The descriptive statistics of all variables used in the study are summarized in Table 1 of the Appendix).

Most of the subjects (58.1%) experienced either slight or extreme worsening of their work situation during the crisis, while 33.1% felt no changes and only 8.5% profited from the circumstances of the crisis.

A more detailed summary of the descriptive statistics can be found in the Appendix in Figures 1 to 4 which depict the most important sample characteristics in pie charts. Figure 5 illustrates scatter plots of each pair of variable. Histograms of each variable are depicted on the diagonal area whereas the last part of the figure shows the regression line.

The correlation coefficients between motivation and all other JCM variables were significant. The highest correlation was found between motivation and GNS (r=.34), followed by dealing with others (r=.27), task identity (r=.26), autonomy (r=.26), and feedback (r=.21); these were significant at $p<0.01$. The correlation coefficients between motivation and task variety (r=.17) as well as between motivation and friendship opportunities (r=.17) were also significant on a $p<0.05$ level. The correlation matrix of all variables is provided in Figure 1 and Figure 2 of the Appendix.

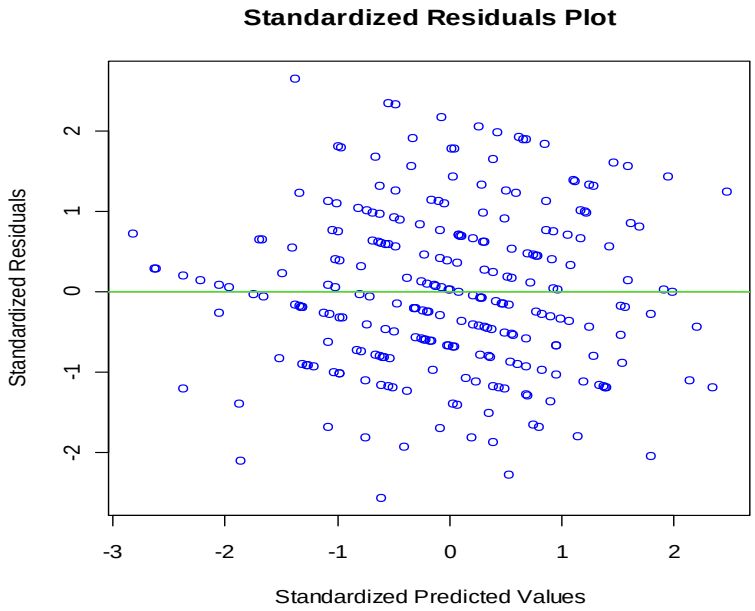
Due to the reasonably large sample (N = 272), most of the correlation coefficients were statistically significant, which suggests possible problems with multicollinearity, but this issue will be addressed in the following part of the thesis.

5.2. Hypotheses testing- using Regressions

5.2.1. Testing the assumptions of linear regressions

Prior hypotheses testing, several tests were performed to test whether the dataset meets all assumptions required for regression models. The first assumption is that there is a linear relationship between dependent and independent variables. Violations of linearity are usually most evident in a plot of the observed versus predicted values or a plot of *residuals* versus predicted values. Linearity is supported if the points are symmetrically distributed around a horizontal line of the plot (Duke University, 2010). Values that are close to the horizontal line are predicted well. The points above the line are underpredicted and the ones below the line are overpredicted (Quick, 2010). The plot of the standardized residuals is presented in Figure 2. The plot shows that the amount of points scattered above and below the horizontal line is approximately equal, therefore the assumption of linearity is met.

FIGURE 2: PLOT OF STANDARDIZED RESIDUALS



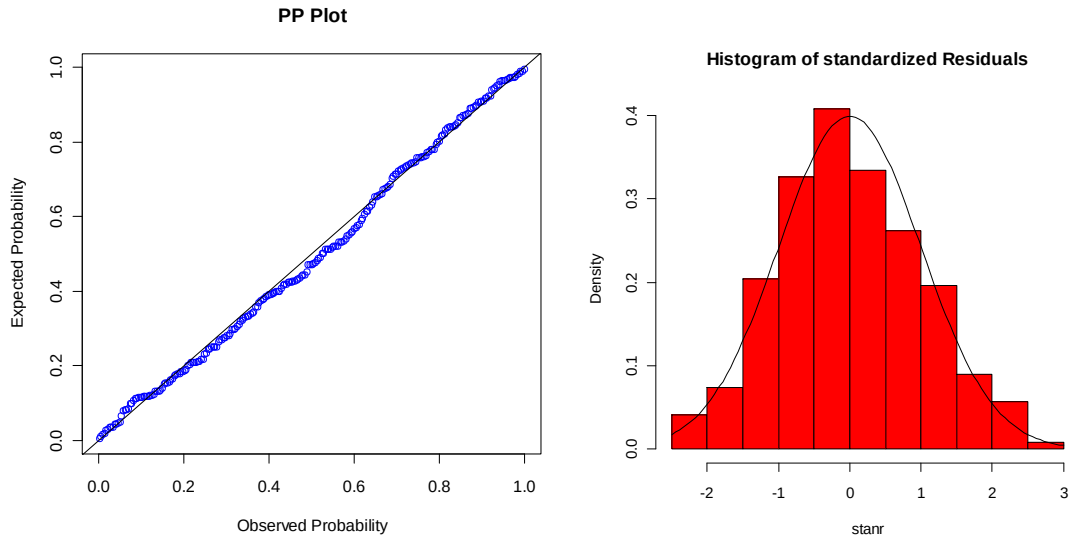
The second assumption of regressions is violated if the data does not meet the assumption of independence. Serial correlation of the residuals (dependence) means that there is room for improvement in the model, and extreme serial correlation is usually a sign of a badly misspecified regression model. Residual autocorrelation can be proved with an *autocorrelation plot* of the residuals or the *Durbin-Watson statistic* which should ideally lie between 1.4 and 2.6 (Quick, 2010). The Dubrin Watson value of 2.003 lies within the acceptable range, therefore the assumption of independence is met.

The third assumption of regression (homoscedasticity or non-constant error variance) is met when the variance of the dependent variable is the same for all the data (statistics.com, 2010). Several methods can used to prove this assumption. The most common however is to plot each independent variable against the square of the residual; but this method should be avoided since it is the least reliable (Quick, 2010). In this study the Breusch- Pagan test was used to prove the assumption homoscedasticity. This test is more reliable than the visual inspection of residuals plotted against fitted values since it is designed to detect any linear form of heteroskedasticity. The Breusch-Pagan test proves the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables (Berry & Feldman, 2010). Before calculating the Breusch-Pagan test the OLS residuals ($e_i = y_t - \vec{x}_t^T \vec{b}$) and the estimated variance of disturbances need to be obtained first. The estimated variance of disturbances can be computed using the following formula: $\sigma^2 = \sum et^2 / n$. Once these two values are calculated a new variable e_t^2 / σ^2 needs to be created and entered into the regression model as a new dependant variable (Rizzi, 2009). Finally, the Breusch-Pagan value is obtained by the formula: $BP_1 = \frac{1}{2} SS_M$. BP is asymptotically distributed as a $\chi^2_{(p-1;1-0.05)}$ (where p is the number of the estimated regression coefficients), thus higher χ^2 values usually indicate that heteroskedasticity is present (Berry & Feldman, 2010). The BP value χ^2=1.52 is smaller than the critical value $\chi^2_{(5;0.95)}$=11.07, therefore the H_o cannot be rejected, which means that heteroskedasticity is not present.

An additional requirement for conducing regression is the assumption of normally distributed residuals. If there are too many outliners in the sample the error distribution

will probably become skewed, thus the assumption of normality will be violated (Quick, 2010). This assumption can be proved with histograms or PP plots Svetina & Levy (2009). The histogram is very close to a perfect normal distribution and most points of the PP plot are very close to the diagonal line. Thus, both visualization methods demonstrate that the residuals are normally distributed.

FIGURES 3A & 3B: PP PLOT AND A HISTOGRAM OF STANDARDIZED RESIDUALS



The last assumption of regression models (multicollinearity) is violated if two or more predictor variables are highly correlated. If multicollinearity is ignored individual p values can be misleading (a p value might not be significant, even though the variable is an important predictor of the dependant variable). Additionally, the confidence intervals on the regression coefficients will be very wide, they may even include zero, which means that an increase in the X value cannot be associated with an increase, or a decrease, in Y. Multicollinearity can be tested by examining the Variance Inflation Factor (VIF). Values of VIF that exceed 10 are often regarded as indicating multicollinearity, but in weaker models values above 2.5 may be a cause for concern (Motulsky, 2002.) Another possibility to test multicollinearity issues in regression models is to asses “tolerance” values, which are an indication of the percent of the variance in the predictor that cannot be accounted for by other predictors. Therefore small values usually indicate that the predictor is redundant, and values less than .10

should be investigated further (UCLA: Academic Technology Services, 2010). With all VIF values lying in a range from 1.28 - 1.72 the assumption of multicollinearity was not violated.

5.2.2. Testing Hypothesis 1

Since all assumptions were met, multiple linear regression analysis was performed to test the hypotheses of this study. The first hypothesis was that job characteristics would predict levels of internal motivation. To test this hypothesis all job characteristics (task variety, task identity, feedback, autonomy, friendship opportunities and dealing with others) were entered into the first regression model. The job characteristics accounted for 13.8% of the variance in internal motivation. However, only three job characteristics were found to be significant, positive predictors of motivation levels. Dealing with others was found to be best predictor of internal motivation (β=.174, t(238)=2.60, p=0.001). Task identity (β=.136, t(238)=2.13, p=0.034) and autonomy (β=.122, t(238)=2.05, p=0.042) also explained a significant proportion of variance in motivation scores, whereas feedback, friendship opportunities and task variety did not yield a significant result. These findings provide partial support for the first hypothesis, with the job characteristic of feedback, friendship opportunities and task variety failing to demonstrate a significant effect on motivation.

5.2.3. Testing Hypothesis 2

In the second model, the fist moderating factor GNS was added as a predictor in order to control for its influence. Adding GNS alone did not lead to problems of multicollinearity, since all VIF and tolerance values remained in the accepted range. GNS accounted for a further 5.8% in the variance in internal work motivation. With GNS controlled for, the significance of the job characteristics changed as well, with task identity remaining the only significant predictor of work motivation (β=.111, t(233)=1.94, p=0.05). GNS was a significant positive predictor of internal work motivation levels (β=.290, t(233)=4.17, p=0.000), supporting hypothesis 2. In order to

measure the moderating effect if GNS interaction terms were added along with the job characteristics into the regression model. Adding the interaction terms increased the explained variance for additional 4.8%. These interactions consisted of each GNS with each of the six job characteristics. However, when interactions were added to the model all VIF values increased above the accepted value of 10 (for models with large samples) which indicated problems with multicollinearity. To reduce multicollinearity, all variables were centered at zero according to the technique described by Aiken and West (1991), which resulted in VIF [1.257, 2.139] and tolerance [.414, .796] ranges within acceptable standards discussed earlier in the study. With the interaction terms in the model none of the job characteristics reached significance level. Task identity was only significant at a 10% level (β=.117, t(226)=1.73, p=0.084), whereas the significance level of the GNS did not change in comparison to the previous model (β=.227, t(226)=4.22, p=0.000). Expect for the interaction effect between GNS and task identity which was significant only at a 10% level (β=.134, t(226)=1.84, p=0.067), none of the interactions lead to a significant result. The interactions between GNS and the job characteristics did not lead to a significant result, whereas GNS alone remained a significant predicator of internal motivation (β=.134, t(226)=1.84, p=0.067), but on p<.10.

5.2.4. Testing Hypothesis 3: The moderating effect of procedural constrains

In the third model, the second moderating factor procedural constrains was added into the regression model. The negative coefficient yielded a non-significant result (β=-.095, t(226)= -1.54, p=0.12) indicating that procedural constrains do not have an effect on internal motivation, and thus rejecting hypothesis 3. (The interaction effects were also not significant; therefore the results will be not presented). Adding procedural constrains to the original regression model containing all job characteristics as independent variables and motivation as the dependant one, did not change the significance levels.

5.2.5. Testing Hypothesis 4a: Relationship between the job characteristics and 'autonomy' /'task variety' and labor productivity

Hypotheses 4a and 4b were used to reexamine the results found by Devaro (2007), who found a significant positive relationship between the job characteristics 'task variety' and 'autonomy' and the organization's level of labor productivity relative to the industry average as well as the organization's level of product (or service) quality relative to the industry average.

These hypotheses were tested with multinomial logistic regression models, because both dependant variables; labor productivity and level of product (or service) quality were graded on nominal scales taking values of*: I don´t know/I don´t have enough information to make this decision, below average, in average* and *above average*. Multinomial logistic regression is the extension of the (binary) logistic regression when the categorical dependent outcome has more than two levels (Chen, 2005). For example, in this study instead of predicting only above or below average productivity scores, additional categories were included, namely: in average and not being able to make the prediction.

In multinomial logistic regression models reliable estimation of the probabilities of each outcome for the dependent variable requires a sufficient number of observations in the cells corresponding to each outcome. Since the cell counts in the highest and lowest categories of the independent variables (autonomy and task variety) were too small, the data was aggregated into two categories. Thus, after aggregation the independent variables were measured on the following scale: 1=below average and 2=below average. (All values below the mean were included into the first category, whereas values that exceeded the mean constituted the second category). Aggregating the data was necessary in order ensure that the requirement of multinomial logistic regression was met; which states that if there are more than 80% of cells with counts less than 5, and cells with counts of 0, the chi-square test of goodness of fit will become very unreliable, thus, violating the "adequate cell count" assumption of logistic regression models. Therefore in such cases it is recommended to aggregate the data (Bender & Benner, 2000).

In order to test the model the last category of the dependant variable (productivity of the company-*above average*) was be used as a reference category. The probability of membership in other categories will be compared to the probability of membership in the reference category. For a dependant variable with K categories, a total of k-1 equations (one for each category relative to the reference category) are needed to describe the relationship between the dependant and independent variable. Therefore, the following equation was applied (see Bender & Benner, 2000):

$$P(Yi = k) = \frac{\exp(Zki)}{1 + \sum_{k-1}^{K} (Zki)}$$

As mentioned above, the last category was used as a reference, therefore three equations were tested: (1) comparing the reference to those who felt that they don´t have enough information to make the decision, (2) reference category in relation to those who believed that the productivity of their company was below average, (3) comparing the reference to the "in average" category.

Aggregating the independent variable eliminated the number of cells with count of zero. Both Pearson's chi square (χ^2 =1.211) and the deviance values (χ^2 =1.323) have significance levels p>0.05 which is good in this case, because the H_0 stating that the model adequately fits the data can be accepted. Nevertheless, the likelihood ratio test (which is a measure of the contribution of each variable to the model) showed that even though the contribution of task significance was much higher than the contribution of autonomy, none of these values led to a significant result. Therefore, it is not surprising that the Pseudo R^2 tests (Cox and Snell/ Nagelkerke) indicated that only about 4% of the variance can be explained by the Autonomy+ Task Identity model.

The parameter estimate values indicated that there are three significant comparisons. (All results are summarized in Table 4) For the variables task variety and autonomy (below average=1, above average=2) above average scores were compared to below average task variety and autonomy scores.

TABLE 4: RESULTS OF MULTINOMINAL LOG REGRESSION- WITH PRODUCTIVITY AS DV

Parameter Estimates

Predictor		*B*	*SE B*	*W*	e^B
I don´t know					
	AUT>mean	.437	.388	1.27	1.04
	AUT<mean	0[b]			
	VAR>mean	.466	.381	1.49	1.09
	VAR<mean	0[b]			
Below Average					
	AUT>mean	.370	.335	1.22	.751
	AUT<mean	0[b]			
	VAR>mean	1.10	.341	10.44	3.01**
	VAR<mean	0[b]			
In average					
	AUT>mean	.391	.192	4.15	1.47*
	AUT<mean	0[b]			
	VAR>mean	.408	.185	4.86	1. 50*
	VAR<mean	0[b]			

The reference category is: better than average
*p < .05. **p < .01.

The first half of Table 4 has the outcome of "I don´t know/or don´t have enough information" compared to "better than average". These results were not significant therefore it can be assumed that there are no differences between these groups. However, when we look at the next comparison ("below average" and "better than average") the contrast between subjects who experienced low levels of task variety vs. those with variable tasks becomes highly significant. Meaning that people with low levels of task variety were more likely to rate their companies productivity below the industry average [Odds Ratio: OR=3.01; p=0.001(95% CI 1.54 to 5.87)]. Similarly, people who experienced low levels of task variety were more likely to rate their companies productivity as mediocre [Odds Ratio: OR=1.50; p=0.028 (95% CI 1.04 to 2.16)], however this contrast was influenced by the levels of autonomy as well. The results support the hypothesis by showing a significantly higher probability of rating the company's productivity as average, if the workplace facilitates only below average autonomy levels [Odds Ratio: OR=1.47; p=0.042(95% CI 1.02 to 2.15)].

5.2.6. Testing Hypothesis 4b: Relationship between the job characteristics and 'autonomy' /'task variety' and service (or product) quality relative to the industry average

Similarly, as in the first multinomial log regression model (described above) the cell counts in the highest and lowest categories of the independent variables (autonomy and task variety) were too small, thus the data had to be aggregated into two categories. After aggregation the independent variables were measured on the following scale: 1=below average and 2=below average. In order to test the model the last category of the dependant variable (service or product quality *above average*) was used as a reference category. The contrasts used in the first regression model were repeated, with product/service quality as a dependant variable.

Pearson's chi square (χ^2 =1.211) and the deviance values (χ^2 =1.323) resulted in p values above the significance limit, suggesting that an adequate model fit. Similarity to the first model the likelihood ratio test (which is a measure of the contribution of each variable to the model) did not yield a significant result. However, the contribution of task variety was very close to the significance level (p=0.06). The Pseudo R^2 tests (Cox and Snell/ Nagelkerke) indicated that only about 4% of the variance can be explained by the Autonomy+ Task Identity model.

The parameter estimate values indicated that there is only one significant comparison. (All results are summarized under Table 5).

TABLE 5: RESULTS OF MULTINOMINAL LOG REGRESSION- WITH LABOR/ SERVICE QUALITY AS DV

Parameter Estimates

Predictor		*B*	*SE B*	*wald*	e^B
I don´t know					
	AUT>mean	.186	.505	.135	1.20
	AUT<mean	0[b]			
	VAR>mean	.686	.503	1.86	1.98
	VAR<mean	0[b]			
Below Average					
	AUT>mean	.-766	.619	1.53	.465
	AUT<mean	0[b]			
	VAR>mean	.586	.536	1.19	1.80
	VAR<mean	0[b]			
In average					
	AUT>mean	.034	.288	.014	1.04
	AUT<mean	0[b]			
	VAR>mean	.706	.282	6.24	2.03*
	VAR<mean	0[b]			

The reference category is: better than average
*p < .05. **p < .01.

Table 5 shows a significant comaprsion of “in average” to “above average”- those with lower levels of task variety were more likely to rate the service (or product quality) of their firm as mediocre than subjects with highly variable tasks. These findings provide partial support for the last hypothesis, because there was no significant relationship between the job characteristic autonomy and the perceived quality of products (or service).

5.3. Additional Results

In order to investigate gender differences in the presence of job characteristics during the financial crisis several t tests were conducted. Women (*M*=3.50, *SD*=0.94) rated task identity significantly higher than males (*M*=3.17, *SD*=0.81, p<.05, *r*=0.18), indicating that women felt that their jobs allowed them to complete a piece of work from beginning to the end. The difference in motivation which was significant only at p<.10 showed the same trend; female employees were more motivated (*M*=3.56, *SD*=0.78) than male subjects (*M*=3.39, *SD*=0.71, *r*=0.11) included in this sample. No gender differences were found based on the remaining job characteristics.

FIGURE 4A AND 4B: SIGNIFICANT GENDER DIFFERENCES

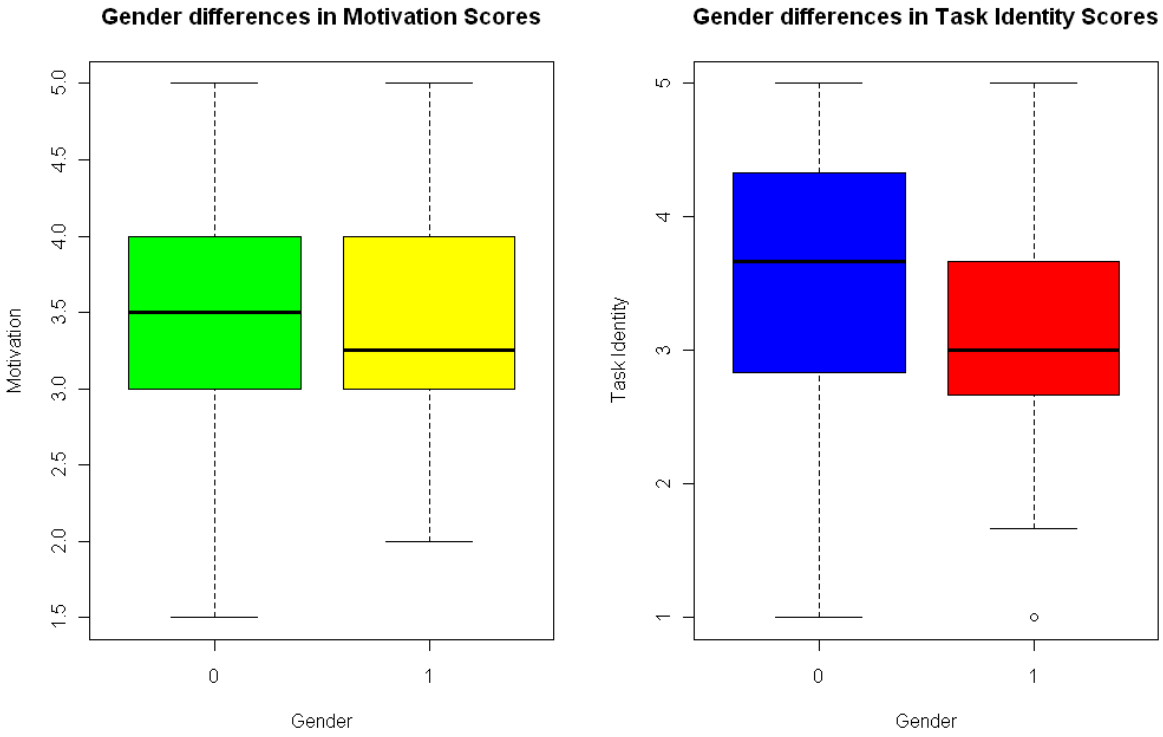


Figure 6 A and B: 0=female, 1=male

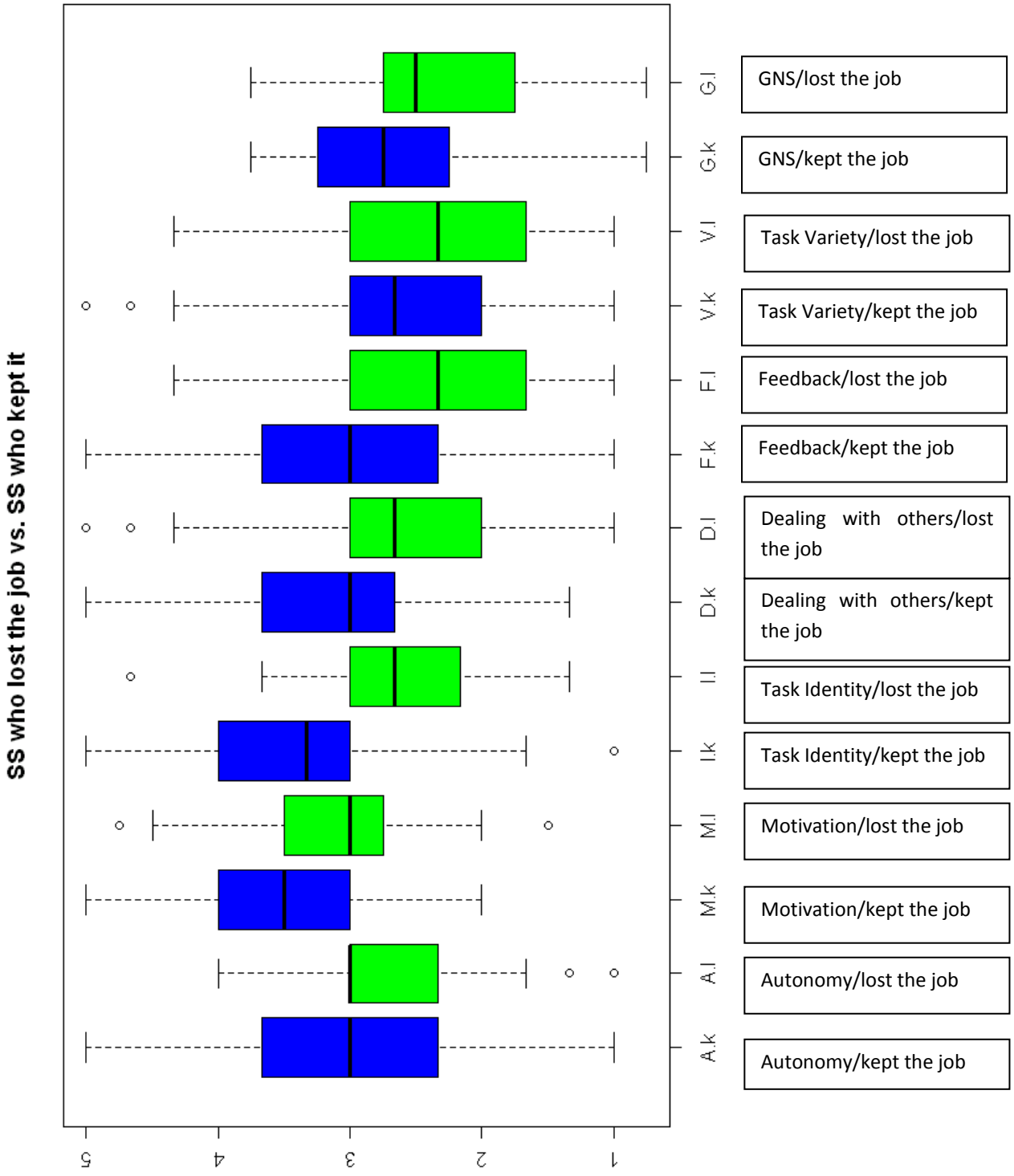
In the next stage of the explorative data analysis differences in job characteristics based on industry type were explored. Due to the small number of subjects in most industry segments, only the two biggest groups (IT/Engineering and Sales/Retail) were included in the analysis. The results of the t tests showed that subjects working in IT/ Engineering (*M*=3.12, *SD*=0.94) experienced significantly more feedback during the

crisis than people working in Sales (M=2.70, SD=1.04; t(177)=2.43; r=0.18, p<.05). The difference between autonomy scores was significant at p<.10 and it indicated the same trend; subjects working in IT (M=3.02, SD=0.85) felt that they had more autonomy during the crisis than employees in Sales departments (M=2.72, SD=1.06; t(175)=1.71; r=0.13).

As assumed motivation scores of subjects who were not able to keep their job during the crisis were significantly lower (M=3.07, SD=0.38) than of those who stayed in their current positions (M=3.54, SD=0.36*;* t(51.3)=-3.45; r=-0.54). Except for friendship opportunities, subjects who lost their jobs rated all JCM variables significantly lower. The biggest difference was based on task identity scores (M_{lost}=2.51, SD_{lost}=0.75 vs. M_{kept}=3.42, SD_{kept}=0.86 t(50.4)=-5.90; r= -0.47) followed by feedback (M_{lost}=2.46, SD_{lost}=0.97 vs. M_{kept}=3.19, SD_{kept}=0.95 t(50.4)=-3.99; r=-0.36), autonomy (M_{lost}=2.56, SD_{lost}=0.80 vs. M_{kept}=3.05, SD_{kept}=0.91 t(52.43)=-3.40; r=-0.26) and dealing with others (M_{lost}=2.57, SD_{lost}=0.90 vs. M_{kept}=3.02, SD_{kept}=0.90 t(48.7)=-3.84; r=-0.24).. The smallest differences between the two groups were found based on task variety (M_{lost}=2.25, SD_{lost}=0.93 vs. M_{kept}=2.66, SD_{kept}=0.92 t(51.38)=-2.55; r=-0.22) and GNS (M_{lost}=2.27, SD_{lost}=0.68 vs. M_{kept}=2.63, SD_{kept}=0.80 t(46.4)= -2.50; r=-0,22.)

The boxplots of the results are summarized in Figure 5. The variables are named using the first letter of the JCM variable (e.g. “A” stands for autonomy) and the letters k and l stand for “kept the job” or “lost the job”.

FIGURE 5: DIFFERENCES IN JCM VARIABLES BETWEEN SUBJECTS WHO LOST AND KEPT THEIR JOBS DURING THE CRISIS



In order to examine the relationship between age of the subject and the job characteristics and age, age was correlated with each job characteristic separately. The highest positive significant correlation was found between age and dealing with others $r(267) = .20$, $p < .01$, followed by autonomy $r(263) = .18$, $p < .01$, task identity $r(267) = .17$, $p < .01$ and motivation $r(267) = .10$, $p < .05$. All correlation coefficients are positive suggesting that older employees experienced more opportunities to deal with others, more autonomy and task identity and felt more motivated during the crisis than younger subjects included in the survey.

In order to examine the relationship between income and job characteristics Spearman´s rank correlation analysis was performed (income was rated on an ordinal scale). Income correlated highly with task identity $r(267) = .24$, $p < .01$, levels of autonomy $r(263) = .20$, $p < .01$ and dealing with others $r(267) = .18$, $p < .01$. Correlations between income and motivation $r(268) = .15$ as well as task variety $r(269) = .13$ were significant at $p < .05$. Again all correlation coefficients were positive, suggesting higher job characteristic levels among subjects who earn more.

5.4. Testing the mediating role of GNS

Since the interaction terms with GNS and the job characteristics did not lead to a significant result it can be concluded that GNS does not moderate the relationship between the job characteristics and internal motivation. However, adding GNS as a predictor into the regression model changed the coefficients of autonomy and dealing with others from significant into a non significant value, which suggest that GNS might mediate the relationship between these two variables and motivation.

Baron & Kenny (1986, p.1176) give the following definition of mediator variables: "In general, a given variable may be said to function as a mediator to the extent that it accounts for the relation between the predictor and the criterion. Mediators explain how external physical events take on internal psychological significance. Whereas moderator variables specify when certain effects will hold, mediators speak to how or why such effects occur." For example, if GNS would moderate the relationship between autonomy and motivation, it would mean that the relationship between these two variables is higher for people with high levels of GNS and less strong or nonexistent for people with

low GNS scores. If, on the other hand, GNS has a mediating role, this would mean that GNS explains why there is a relationship between autonomy and motivation in the first place (see MacKinnon, 1999). A variable functions as a mediator when it meets the following conditions: (a) there is a significant correlation between predictor variable and the dependent variable. (b) The predictor variable must account for a significant proportion of the variance in the mediating variable. (c) The mediator variable must also account for a significant proportion of variance in the dependent variable and (d) the association between the predictor variable and the dependent variable must be significantly less after controlling for the variance shared between the mediator and dependent variable (Frazier, Tix, & Barron 2004).

In order to explore whether GNS mediates the relationship between dealing with others and motivation the following steps suggested by Frazier et al. (2004) were conducted: (a) at the beginning, a regression analysis was calculated in which the dependant variable (motivation) was regressed on the independent variable (dealing with others) yielding the coefficient corresponding to Path *c´* in Figure 6A. (Standardized path coefficients are depicted with the corresponding unstandardized coefficients which are shown in parentheses). (b) In the second analysis, the mediator variable (GNS) was regressed on the independent variable (dealing with others) to obtain the regression coefficient for Path *a* (*B*=.366). (c) Finally, the dependent variable was regressed on both the mediator and the independent variable. This analysis provided the standardized regression coefficients Paths *b* (*B* =.321) and *c* (*B* =.166), respectively (both summarized in Figure 6B. (see Mallinckrodt Abraham, Wei & Russell, 2006).

FIGURE 6A AND 6B: MEDIATION OF GNS (IV: DEALING WITH OTHERS)

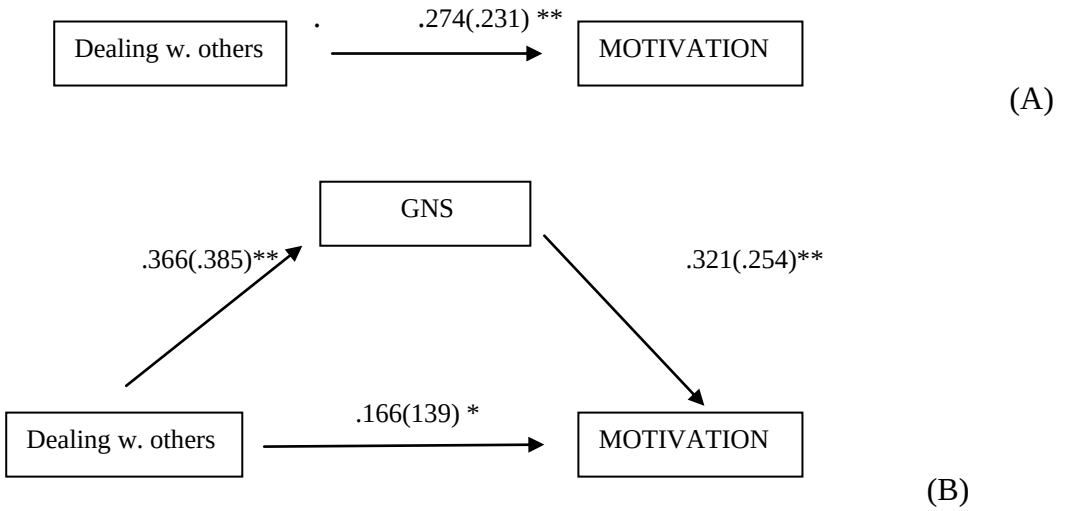


Figure 6A and 6B. A three-variable mediation model. A: The direct effect model of dealing with others on motivation. B: The mediation model with GNS as a mediator between dealing with others and motivation. Standardized path coefficients are shown, with corresponding unstandardized coefficients in parentheses. *N* =272. *p < .05; **p < .01.

Using the raw unstandardized coefficients the Sobel test of mediation was performed. A standard error of (SE_{ab}=.024) was obtained, as well as a *Z* value (*Z*=4.08) which was significant at p<.01. These results indicate that the indirect effect of dealing with others on motivation is mediated by levels of GNS experienced during the crisis. Besides the positive *Z* statistic of the Sobel test all conditions of mediating variables were met: (a) there was a significant correlation between predictor variable (dealing with others) and the dependent variable (motivation), illustrated in Figure 6A (Path *c´*). (b) Dealing with others did account for a significant proportion of the variance in GNS. (c) GNS also accounted for a significant proportion of variance in motivation scores and (d) the association between dealing with others and motivation was significantly smaller after controlling for the variance shared between the mediator and dependent variable. (That is, path *c* (*B*=.166) was significantly smaller than path *c´* (*B*=.274).

In order to explore the mediating effects of autonomy the same procedure by Frazier et al. (2004) already described above was used. The results are summarized in Figures 7A and 7B.

FIGURE 7A AND 7B: MEDIATION OF GNS (IV: AUTONOMY)

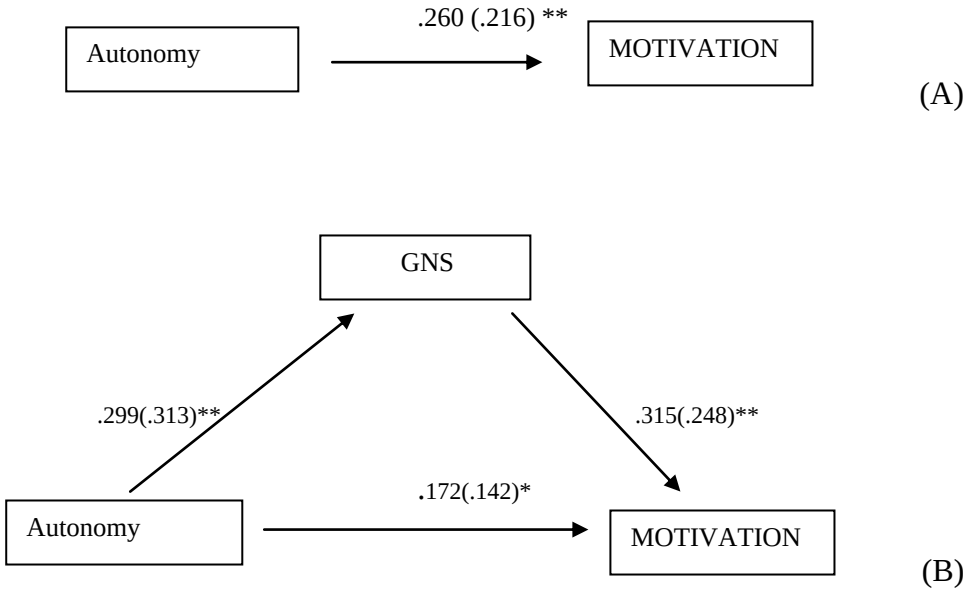


Figure 7A and 7B: A three-variable mediation model. A: The direct effect model of autonomy on motivation. B: The mediation model with GNS as a mediator between autonomy and motivation. Standardized path coefficients are shown, with corresponding unstandardized coefficients in parentheses. N =272. *p < .05; **p < .01.

The Sobel test of mediation yielded a significant result; standard error of (SE_{ab}=.022) and (Z=3.62, p<.01) which suggests that the direct effect of autonomy on motivation is mediated by levels of GNS. Once again, all conditions of mediating variables were met: (a) there was a significant correlation between predictor variable (autonomy) and the dependent variable (motivation), illustrated in Figure 7A (Path *c´*). (b) Autonomy explained a significant proportion of the variance in GNS. (c) GNS also accounted for a significant proportion of variance in motivation scores and (d) the association between autonomy and motivation was significantly smaller after controlling for the variance shared between the mediator and dependent variable. (That is, path *c* (*B*=.172) was significantly smaller than path *c´* (*B*=.260). This proves that GNS mediates the relationship between autonomy and internal motivation.

A mediation test was calculated for task identity (being the dependant variable) as well. However, it did not lead to a significant result.

6. DISCUSSION

In the discussion section I will interpret the results of the study and I will offer implications for theory and practice. Limitations of the study are also explained, along with ideas and suggestions for future research.

The first hypothesis was only partially supported, since feedback friendship opportunities and task variety did not predict motivation scores. On the other hand, dealing with others, autonomy and task identity explained a significant proportion of internal motivation. Similarly to Lee Ross (1998) and Cleave (1993), the applicability of the JCM could be conformed only partially in times of financial crisis. The results of this study suggest that regardless of gender, industry type or income, employees who experienced higher levels autonomy and task identity and had the opportunity to deal with others in their job felt more motivated to work during the crisis. This suggests that employees can stay motivated, even in times of economic recessions or turbulences, if the job requires work with other people, if they are involved in projects from first drafts to completion, and are given substantial freedom and independence in determining procedures and ways to execute their tasks. But this does not imply that employees do not want value friendship opportunities at the workplace, feedback from their supervisors or variable tasks. The fact that these job characteristics failed to predict motivation scores could be interpreted in two ways: On the one side, it can be assumed that these characteristics do not influence motivation during times of crisis, but could have an effect under normal working conditions. On the other side, these results might be traced back to the fact the IT/Engineering industry was overrepresented in this sample. However, this is a less plausible explanation because Sims et al. (1976) found significant effects of all job characteristics on motivation for diverse technical professions, among all for IT as well.

The means of all job characteristics (expect for feedback) are significantly lower than the ones found by Sims et a. (1976) which might suggest that during times of financial crisis employees experienced a worsening of all job characteristics. Interestingly, subjects who lost their jobs scored significantly lower on all job

characteristics and motivation. Unfortunately the results of this study do not answer the question whether these people gave lower ratings because they were upset about losing their jobs, or if they lost their job due to lack of motivation. But in order to verify these results as well as the applicability of JCM during crisis the model should be examined in further studies as well.

Hackman & Oldham (1975) suggest that employees' reactions to job characteristics and to psychological states are moderated by the strength of their needs for personal growth and accomplishment at work (i.e., GNS). However, research on the moderating role of GNS did not lead to consistent results. While some studies found only weak moderator effects of GNS, others failed to demonstrate any effects at all. In this study GNS served as a mediator between the job characteristics autonomy and dealing with others and internal motivation. This might seem as a surprising founding because Hackman & Oldham (1975) assumed that GNS moderates the relationship between the job characteristics and positive work outcomes. But this study is not the first one to confirm mediating effects of GNS (see Renn & Vandenberg, 1995).

Procedural constrains did not moderate the relationship between the job characteristics and motivation as suggested by Wright (2004). Despite, the significant negative correlation coefficient between procedural constrains and motivation (r= -.12) procedural constrains failed to predict motivation scores in the regression model.

The results generally support the Job Characteristics Model's predictions that task variety and worker autonomy are positively associated with labor productivity and product quality. For labor productivity, both autonomy and task variety had an effect on productivity; the quality of products or services on the other hand, was only influenced by levels of task variety. Thus, the findings of De Varo (2007) were not supported fully; nevertheless, these results might be of a great value for practitioners.

6.1. Implications for Theory

The findings of this study offer several implications for the JCM as a theory. Firstly, the job characteristics dealing with others and friendship opportunities should not be excluded from the JCM. These variables measure social support and social

contact in organizations, which are gaining in importance in modern times (Steers et al.,2004). In contrast to previous research, GNS mediated the effect between dealing with others and motivation as well as between autonomy and motivation, thus the mediating roles of GNS should be examined in the future as well. The failure of feedback, friendship opportunities and task variety to predict levels of motivation can be partly due to the crisis setting, thus these factors might still play an important role in organizations during stable economic times. Finally, while offering little support for the hypotheses of this study, the relationship between procedural constrains and motivation warrants future research focus. The finding that procedural constrains significantly negatively correlate with levels of motivation in this study suggests that there might be evidence of its influence. The relationship between task variety/autonomy and labor productivity or quality of work also needs to be further investigated in the future. It might be interesting to measure productivity and quality of work from different perspectives. De Varo (2007) compared evaluations of productivity and quality of work of employees and objective firm data, and he did not find any significant differences. However, it might be interesting to expand this finding by asking different worker groups and managers (at different hierarchical levels) to rate productivity and quality of work. In contrast to previous JCM studies, the results of this thesis show that task variety has a strong relationship with performance–related variables and does not seem to affect motivation.

6.2. Implications for Practice

This study provides partial support for the application of the JCM in organizations during times of financial crisis. As already mentioned above, during financial crisis employees respond favorably to jobs which are part on an easily observable whole which have regular opportunities for dealing with other people and which allow employees to plan and schedule their work independently. The results of this study demonstrated that subjects who lost their jobs scored significantly lower on all JCM variables, which is a warning signal for managers. Naturally, one can argue that these subjects lost their job because they were not motivated enough, but the results of this these demonstrated that they scored lower on other crucial variables such as: autonomy, feedback etc. Thus, practitioners are advised to monitor these values, especially during

crisis. They should also make efforts to keep the jobs as normal as possible. Additionally, practitioners should assess levels of GNS among their employees and more importantly they should provide adequate growth and development opportunities. Rather than investing in external assessments, the HR department could develop an internal online monitoring tool which would be made available for each employee, and filled out on a regular basis. This would help the management team to detect problems before they become serious, and allow them to make interventions on time.

6.3. Limitations of the study and implications for future research

One major limitation of this study is that it was conducted after the worst times of the financial crisis. Thus, subjects were asked to rate situations and events from the past, which can lead to bias to due memory loss, or objectification of the situation. The attempt to balance this bias by sending the survey to companies who were facing crisis at the time, failed because most people did not want to participate. Additionally, it was very difficult to find companies in crisis who were willing to send the survey to their employees.

The degree of non-response rate is difficult to determine in this study, partly due to the fact that surveys were distributed by mailing lists or managers themselves and were not sent to each participant individually. Theoretically, it would be possible to get an approximation of the non-response rate by dividing the number of all employees in the firms which took part in the study with the number of subjects who filled out the survey. But in this case this would be a rather unreliable estimate, because most managers agreed to distribute the survey only to their own sector or in some cases to several cooperating units within the company, so surveys reached all employees only in smaller companies. However, this is a usual source of error when mailing lists are used as a distribution way. A possible solution to this problem would be to conduct studies with all employees of a company, rather than with a specific segment.

Another limitation if this study is that it was conducted after the worse phase of the crisis already passed. Future studies should try to evaluate motivation levels in companies during an onset of the crisis or during its highest point.

This study was particularly susceptible to social desirability, which is very common in studies done in cooperation with the management. The answers of subjects were

treated individually, however the results were sent out to the management which was interested in the results on industry and not organization level. The social desirability bias could have been reduced by not involving the management at all.

Future studies should also focus on assessing motivation and performance–related variables from different perspectives; e.g. combining objective data, with answers of employees and the management.

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APPENDIX

SURVEY QUESTIONS

Motivation (Hackman & Oldham, 1980)

1. My opinion of myself went up when I did this job well
2. I felt bad and unhappy when I discovered that I have performed poorly on this job
3. I felt a great sense of personal satisfaction when I did this job well
4. My own feelings were generally NOT affected much one way or the other by how well I did on this job

Growth need strength (Hackman & Oldham, 1980)

1. Stimulating and challenging work
2. Chances to exercise independent thought and action in my job
3. Opportunities to learn new things about my work
4. A sense of worthwhile accomplishment in my work

Autonomy (Sims, Szilagyi, and Keller, 1976)

1. How much were you left on your own to do your own work
2. To what extent did you receive information from your superior on your job performance during the crisis
3. To what extent were you able to do your job independently of others

Feedback (Sims, Szilagyi, and Keller, 1976)

1. To what extent were you able to find out how well you were doing on the job as you were working
2. The feeling that I know whether I am performing my job well or poorly
3. The opportunity to find out how well I am doing on my job

Task identity (Sims, Szilagyi, and Keller, 1976)

1. How often do you see project or jobs through to completion
2. The opportunity to complete work I start
3. The opportunity to do a job from the beginning to end (i.e., the chance to do a whole job

Task variety (Sims, Szilagyi, and Keller, 1976)

1. How much variety was there in your job during the financial crisis
2. The opportunity to do a number of different things
3. The amount of variety in my job (minimum amount-maximum amount

Labor Productivity and Quality (De Varo, 2007)

1. How would you assess your company's labor productivity during the crisis compared with other establishments in the same industry?
2. How would you assess your company´s quality of product (or service) during the crisis compared with other establishments in the same industry?

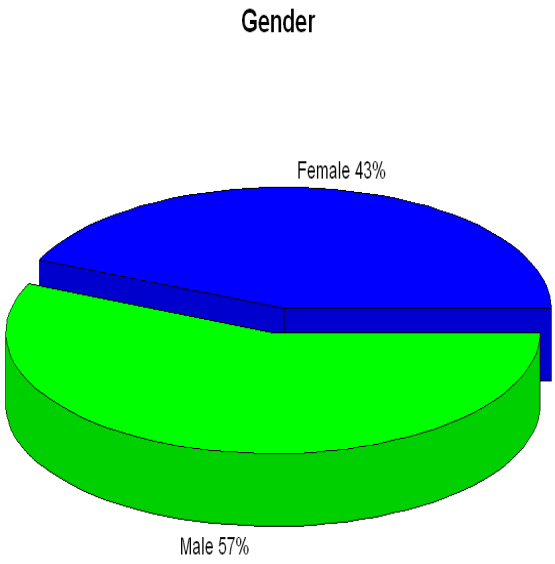
Procedural constrains (Wright, 2004)

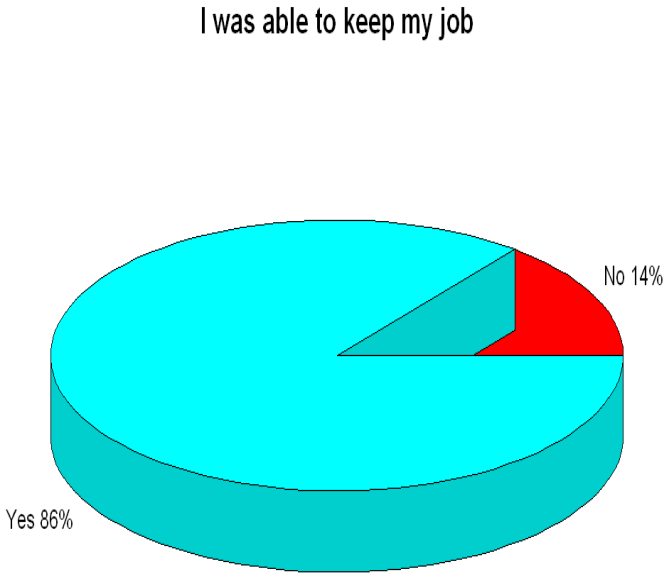
1. In my job even small matters had to be referred to someone higher up for a final answer.
2. During the crisis, this organization seemed much more concerned that I follow procedures than that I do a good job
3. I always had to check with my boss before making important decisions.

APPENDIX: TABLE 1: SUMMARY OF ALL VARIABLES INCLUDED IN THE STUDY

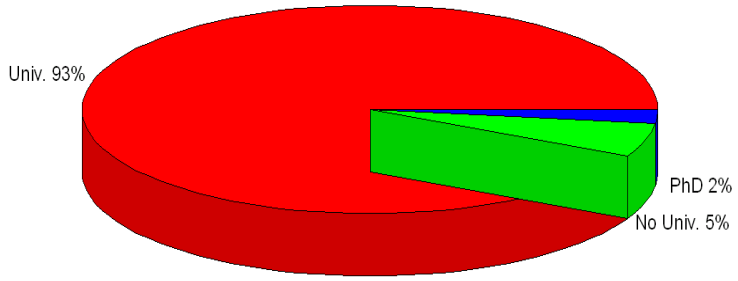
Variable	M	SD	Range	Skew.	Kurt.
Affectedness	2,38	0,86	4	0,4	0,14
Age	33,93	9,02	49	1,19	1
Autonomy1	2,92	1,4	4	0	-1,13
Autonomy2	2,84	1,37	4	0,13	-1,1
Autonomy3	3,2	1,38	4	-0,2	-1,08
Dealing_others1	2,9	1,3	4	0,06	-0,9
Dealing_others2	3,46	1,36	4	-0,37	-1,02
Dealing_others3	3	1,29	4	-0,09	-0,92
Feedback 2	3,04	1,31	4	-0,05	-0,98
Feedback1	2,97	1,24	4	-0,05	-0,72
Feedback3	3,11	1,28	4	-0,08	-0,91
Friendship opp	3,14	1,4	4	-0,12	-1,18
Friendship opp2	3,09	1,34	4	-0,08	-1,03
Friendship opp3	2,97	1,37	4	0,04	-1,14
GNS1	3,09	1,23	4	-0,03	-0,67
GNS3	3,64	1,28	4	-0,52	-0,77
GNS4	3,59	1,2	4	-0,46	-0,59
Motivation1	3,61	1,09	4	-0,26	-0,49
Motivation2	3,24	1,34	4	-0,28	-1,03
Motivation3	3,9	1,16	4	-0,84	-0,12
Motivation4	3,08	1,23	4	-0,14	-0,82
Procedural c. 1	2,47	1,26	4	0,41	-0,88
Procedural c. 2	2,6	1,19	4	0,21	-0,84
Productivity1	2,13	0,76	3	-0,92	1,05
Productivity2	2,27	0,88	3	-1,2	0,78
Task identity3	3,3	1,29	4	-0,23	-0,88
Task identity1	3,29	1,42	4	-0,27	-1,11
Task identity2	3,32	1,28	4	-0,35	-0,9
Variety1	2,33	1,11	4	0,29	-0,56
Variety2	2,65	1,32	4	0,27	-0,93
Variety3	2,82	1,26	4	0,09	-0,85

APPENDIX: FIGURE 1 TO FIGURE 4: PIE CHARTS OF THE MAIN SAMPLE DEMOGRAPHIC DATA

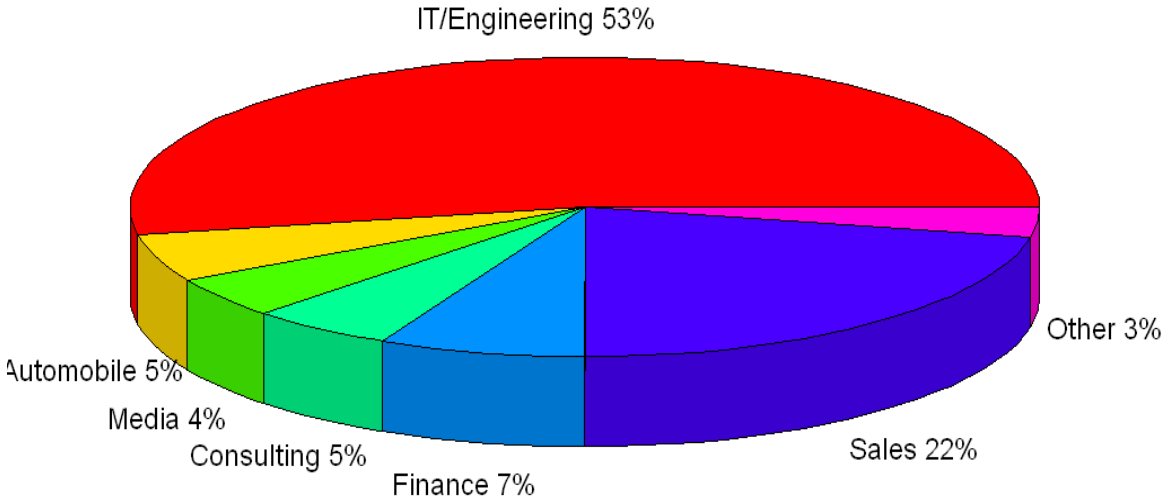




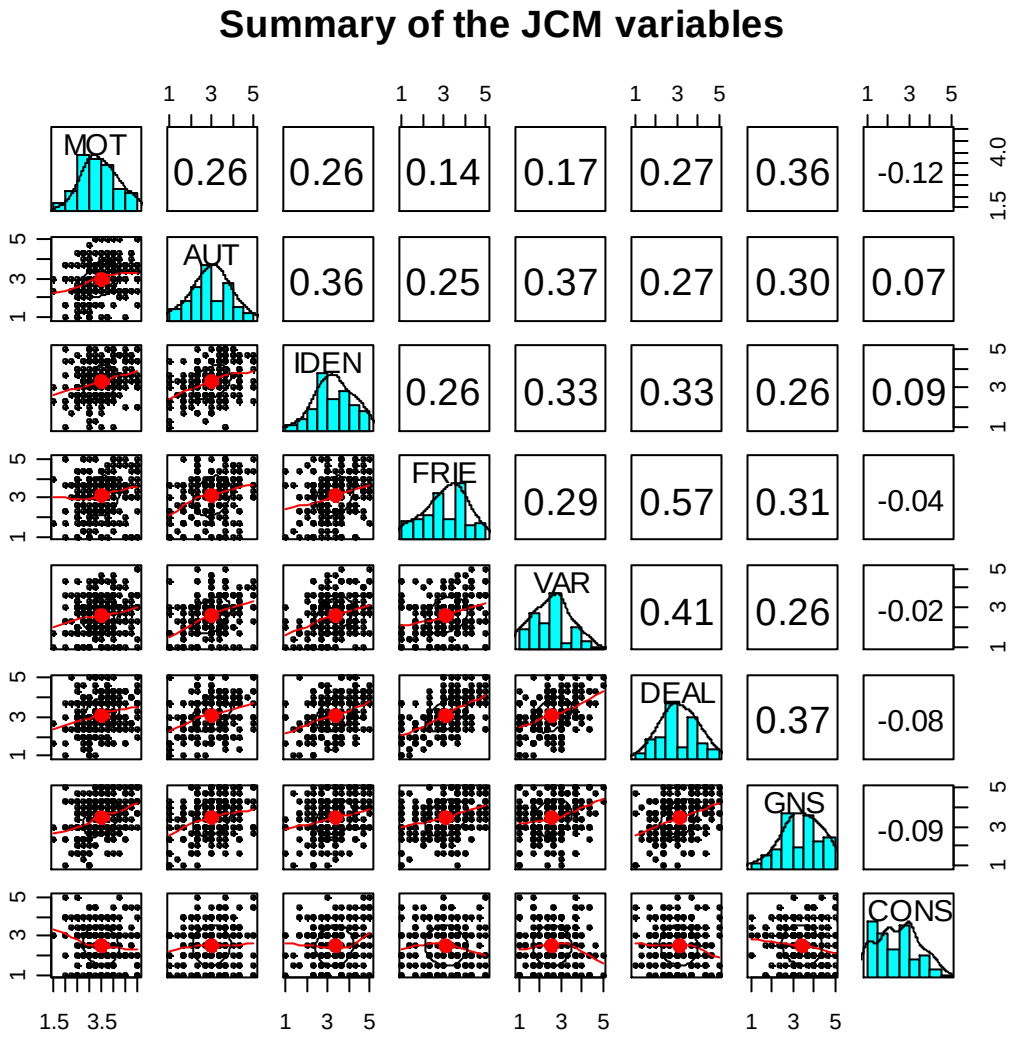
Education



Industry



APPENDIX: FIGURE 2: DESCRIPTIVE SUMMARY OF JCM VARIABLES



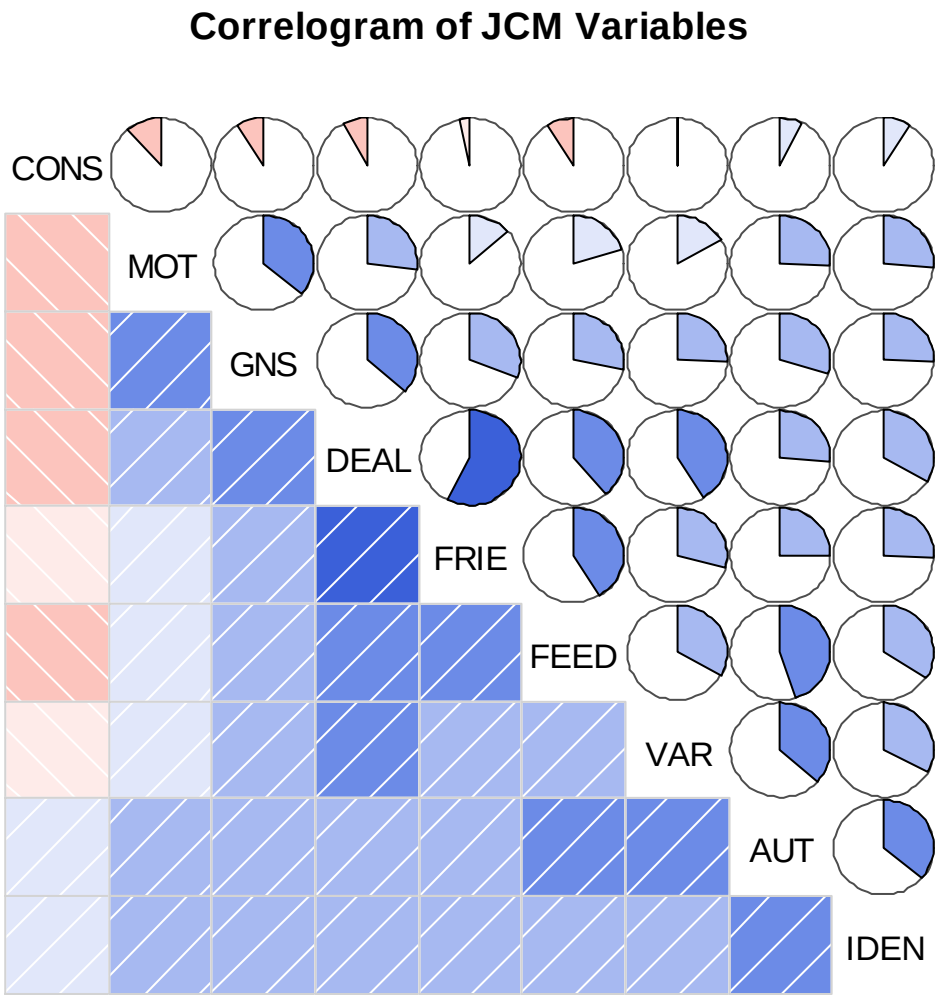
This graph shows xy scatter plots of each pair of variables, it also shows the histogram of each variable on the diagonal, and shows the lowess locally fit regression line as well. An ellipse around the mean with the axis length reflecting one standard deviation of the firrst and second principal components is also drawn. The x axis in each scatter plot represents the column variable, the y axis the row variable. The Pearson correlation coefficients are depicted above the diagonal (Revelle, 2010). For example the correlation between GNS and dealing with others is r=0.37, correlation between GNS and task variety is r=0.26.

APPENDIX: TABLE 2:Complete Scale Correlation Matrix (N=272)

Variables	1	2	3	4	5	6	7	8
1. Autonomy	–							
2. Dealing w. others	.27**	–						
3. Feedback	.45**	.39**	–					
4. Friendship opp.	.25**	.57**	.41**	–				
5. Task Identity	.36**	.33**	.34**	.26**	–			
6. Task Variety	.37**	.41**	.33**	.29**	.33**	–		
7. Motivation	.26**	.27**	.21*	.14*	.25**	.17*	–	
8. GNS	.30**	.37**	.28**	.31**	.26**	.26**	.36**	–

**p<0.01;*p<0.05

APPENDIX: FIGURE 6: CORRELOGRAM OF JCM VARIABLES



How to read the graphic: The intensity of color increases uniformly as the correlation value moves away from 0. Colors are (blue= positive values, pink= negative values) are used to encode the sign of the correlation, the renderings are designed so that the sign may still be discerned when reproduced in black and white. The circles are filled clockwise for positive values, anti-clockwise for negative values (Friendly, 2002). The graphic illustrates that all job characteristics correlate positively with each other, however, the highest correlation coefficient can be observed between dealing with others and friendship opportunities. Procedural constrains correlate negatively with the job characteristics with the highest coefficient between procedural constrains and motivation.

APPENDIX: TABLE 2: CORRELATIONS BETWEEN ALL VARIABLES USED IN THE STUDY

Feeback2	Feedback1	Feedback3	Friendship_opp1	Friendship_opp2	Frienship_opp3	GNS1	GNS3	GNS4
,189**	,206**	,218**	,005	,126*	,080	-,028	,005	-,039
,034	-,029	,080	,024	,141*	,026	,071	-,130*	,118
,112	,207**	,064	,160**	,090	-,003	,199**	,135*	,175**
,423**	,362**	,239**	,012	,064	,129*	,086	,085	,113
,207**	,224**	,214**	,234**	,227**	,146*	,190**	,220**	,141*
,162**	,208**	,210**	,167**	,246**	,140*	,232**	,175**	,180**
,206**	,182**	,152*	,231**	,312**	,282**	,149*	,214**	,217**
,301**	,188**	,308**	,344**	,508**	,465**	,172**	,222**	,229**
,003	-,047	-,001	,140*	,059	,038	,152*	-,063	,031
1	,364**	,481**	,130*	,352**	,343**	,179**	,271**	,189**
,364**	1	,326**	,208**	,204**	,138*	,136*	,188**	,100
,481**	,326**	1	,139*	,335**	,315**	,099	,165**	,084
,130*	,208**	,139*	1	,297**	,297**	,269**	,211**	,184**
,352**	,204**	,335**	,297**	1	,481**	,100	,251**	,139*
,343**	,138*	,315**	,297**	,481**	1	,117	,203**	,110
,179**	,136*	,099	,269**	,100	,117	1	,372**	,386**
,271**	,188**	,165**	,211**	,251**	,203**	,372**	1	,393**
,189**	,100	,084	,184**	,139*	,110	,386**	,393**	1
,021	,042	,083	,121*	,116	-,013	,148*	-,058	,166**
,345**	,264**	,205**	,167**	,246**	,231**	,173**	,366**	,283**
-,029	,054	-,066	-,040	,047	-,028	,163**	,096	,243**
,299**	,260**	,207**	,162**	,205**	,123*	,232**	,282**	,360**
-,104	,007	-,110	-,006	-,053	-,159**	,002	-,075	,064
-,137*	-,051	-,067	,038	-,102	-,080	,041	-,191**	-,119
-,104	-,049	,027	,061	-,012	-,071	-,028	-,112	,022
,191**	,138*	,115	,084	,133*	,168**	,054	,104	,028
,209**	,280**	,123*	,131*	,098	,120*	,165**	,222**	,083
,269**	,177**	,234**	,226**	,082	,145*	,103	,118	,202**
,016	-,012	-,051	,115	,000	-,068	-,082	,039	,132*
,400**	,288**	,214**	,220**	,303**	,161**	,188**	,266**	,280**
,090	,239**	,030	,034	,102	,035	,164**	,054	,107
,257**	,169**	,148*	,068	,328**	,239**	,192**	,240**	,242**
,271**	,254**	,259**	,114	,348**	,244**	,101	,115	,061

Income	Motivation1	Motivation2	Motivation3	Motivation4	Procedural_c 1	Procedural_c 2	Productivity1	Productivity2
,029	,087	-,036	,078	-,077	,017	,067	,082	,027
,585**	,116	,025	,177**	,076	,158**	,152*	,040	,040
,194**	,185**	,145*	,215**	,090	,078	,046	,024	-,032
,010	,181**	-,044	,136*	-,105	-,015	-,041	,156*	,150*
,184**	,237**	-,030	,250**	,062	,115	,015	,107	,052
,130*	,186**	,090	,238**	,026	,060	-,023	,137*	,098
,116	,208**	,150*	,323**	,028	-,156*	-,071	,178**	,158**
,093	,143*	-,010	,112	-,080	-,077	,028	,113	,055
,444**	-,002	,061	-,033	-,093	,014	,078	,127*	,049
,021	,345**	-,029	,299**	-,104	-,137*	-,104	,191**	,209**
,042	,264**	,054	,260**	,007	-,051	-,049	,138*	,280**
,083	,205**	-,066	,207**	-,110	-,067	,027	,115	,123*
,121*	,167**	-,040	,162**	-,006	,038	,061	,084	,131*
,116	,246**	,047	,205**	-,053	-,102	-,012	,133*	,098
-,013	,231**	-,028	,123*	-,159**	-,080	-,071	,168**	,120*
,148*	,173**	,163**	,232**	,002	,041	-,028	,054	,165**
-,058	,366**	,096	,282**	-,075	-,191**	-,112	,104	,222**
,166**	,283**	,243**	,360**	,064	-,119	,022	,028	,083
1	,084	,079	,113	,111	,113	,155*	,138*	,086
,084	1	,199**	,516**	-,011	-,155*	-,082	,249**	,333**
,079	,199**	1	,164**	,171**	-,158**	-,123*	,117	,148*
,113	,516**	,164**	1	,063	-,145*	-,062	,121*	,178**
,111	-,011	,171**	,063	1	,130*	,091	,004	-,035
,113	-,155*	-,158**	-,145*	,130*	1	,402**	-,032	-,026
,155*	-,082	-,123*	-,062	,091	,402**	1	-,014	-,062
,138*	,249**	,117	,121*	,004	-,032	-,014	1	,438**
,086	,333**	,148*	,178**	-,035	-,026	-,062	,438**	1
,222**	,111	-,016	,213**	-,032	,009	,070	,144*	,123*
,004	,119*	,068	,014	,126*	,027	,154*	-,025	-,014
,256**	,346**	,059	,351**	,088	-,004	,010	,193**	,207**
,145*	,088	,079	,131*	,014	,002	-,024	,075	,025
,050	,262**	,077	,127*	,000	-,018	-,045	,076	,122*
,144*	,270**	-,019	,111	-,085	-,017	-,023	,221**	,191**

task_identity 1	task_identity 2	task_identity _last	Variety1	Variety2	Variety3
,116	-,107	,023	,025	,114	,076
,150*	,014	,173**	,024	,042	,107
,237**	,057	,300**	,190**	,155*	,121*
,155*	-,100	,187**	,104	,179**	,218**
,271**	-,050	,327**	,175**	,202**	,297**
,207**	,088	,254**	,205**	,279**	,274**
,210**	,000	,270**	,122*	,147*	,200**
,155*	,031	,182**	,124*	,314**	,268**
,167**	-,026	,026	,021	-,019	,060
,269**	,016	,400**	,090	,257**	,271**
,177**	-,012	,288**	,239**	,169**	,254**
,234**	-,051	,214**	,030	,148*	,259**
,226**	,115	,220**	,034	,068	,114
,082	,000	,303**	,102	,328**	,348**
,145*	-,068	,161**	,035	,239**	,244**
,103	-,082	,188**	,164**	,192**	,101
,118	,039	,266**	,054	,240**	,115
,202**	,132*	,280**	,107	,242**	,061
,222**	,004	,256**	,145*	,050	,144*
,111	,119*	,346**	,088	,262**	,270**
-,016	,068	,059	,079	,077	-,019
,213**	,014	,351**	,131*	,127*	,111
-,032	,126*	,088	,014	,000	-,085
,009	,027	-,004	,002	-,018	-,017
,070	,154*	,010	-,024	-,045	-,023
,144*	-,025	,193**	,075	,076	,221**
,123*	-,014	,207**	,025	,122*	,191**
1	,053	,384**	,208**	,284**	,241**
,053	1	,043	-,060	-,047	-,064
,384**	,043	1	,189**	,300**	,396**
,208**	-,060	,189**	1	,357**	,237**
,284**	-,047	,300**	,357**	1	,440**
,241**	-,064	,396**	,237**	,440**	1

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EDUCATION

96/09-2000	International Grammar High school (Budapest)	
2001-2003	Deree American College of Greece, Athens	Major: Social Sciences
2003-2005	Webster University Vienna	Degree: Bachelor of Social Science with Academic Honors (Major: Psychology and Economy)
2005-2006	University of Vienna	Intensive German language course
2006-2011	University of Vienna (Diploma studies/5 year study program)-in German	Degree: Mag.rer. nat.

WORK EXPERIENCE

12/09-current	Research Assistant at the Vienna University of Economics and Business (Institute: Management Information Systems)	<u>Responsibilities:</u> Data Analysis, Design of research projects <u>Main Projects:</u> •HCI: experiments about interface entropy –designing different interface versions in HTML •HCI: development of an adaptive privacy tool •HCI: Implementation of ambient displays in German retail (in cooperation with GLOBUS, Germany-major supermarket chain)-development of personas, modeling shoppers journey through the supermarket
03/10-07/10	Project work for FUTURE Publishing (UK)	User acceptance analysis: preference for online vs. print media in Austria
05/09- 11/09	Project work for Sauer Coaching & Training	Project management
10/07-11/09	Junior Research Assistant of Dr. Thomas Oberlechner- Webster University) (part time)	<u>Responsibilities:</u> Data Analysis Development of statistical software applications
04/07-11/09	Point Group (Energy Industry) - Sales Department (Budapest/Hungary)	Sales
07/08 - 09/08	Research project for “Lernquadrat” Vienna	Topic: „Learning and Sleep“ The project was awarded with a price and it was broadcasted in all Austrian newspapers and TV stations

Volunteer Experience		
04/05-10/05	AKH Hospital- Departement of Oncology	Volunteer job
09/03-03/04	Maimonides Sanatorium (Psychology Departemnt)	Volunteer job
06/02-08/02	Semmelweis Hospital – Budapest, Hungary	Summer Internship
06/00-08/00	DDB- Advertising Agency	Summer Internship
06/99/08/99	MOL-oil gas group- Budapest, Hungary	Summer Internship

LANGUAGE SKILLS

Serbian/Croatian	Proficient	Native language
Hungarian	Proficient	Native language
English	Proficient	Fluent in spoken and written language
German	Proficient	Fluent in spoken and written language
Russian	Conversant	
Greek	Basic Knowledge	

PUBLICATIONS

Gonja, T & Oetzel, M. (2010).Increasing privacy awareness among users with the help of an adaptive privacy tool (work in progress).

Spiekermann, S. & Gonja,T. (2010). Interface Entropy and the Enigma of Information Sharing. accepted at CHI Workshop for Networked Privacy: Vancouver, 2011.

Gonja, T & Oetzel, M. (2010). Social Representations of new technologies- the case of Google, Smart phone and Social Networks, accepted at CHI: Vancouver, 2011.

Oetzel, M. & Gonja, T. (2010). Web Personalisation Methods in Retail. Under review at the Journal of Retailing and Customer Services.

Berghofer, G., Gonja, T., Oberlechner. (2010). Does Empathy Training really work?: A meta-analytic Review: accepted at the Conference for Applied Psychology: Melbourne

Berghofer, G., Gonja, T., Oberlechner. (2008). Kann Empathie trainiert werden? Ein Review empirischer Studien zur Wirksamkeit von Empathietraining. *Person . 33-48.*

Gonja, T. Österreichische Schüler Schlafen zu wenig!, Der Standard, Die Presse, Kurier, ATV Nachrichten

ADDITIONAL SKILLS

PC Software - Skills	MS Office Internet Explorer, SPSS, AMOS , R, PLS, HTML, JAVA, MATLAB, LATEX
Drivers Licence	B Category