Empowerment job design and satisfaction of the blue-collars’ motivational needs

A case study of Étoile du Rhône and Rastatt Mercedes-Benz factories

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ABSTRACT

The main purpose of this research is to study the impact of the empowerment Job Design (JD) techniques on the satisfaction of the blue-collars’ motivational needs in the context of assembly line system in the automotive industry. We have developed this purpose aiming to make a theoretical contribution due to the fact that only a few studies were developed and were linked to the empowerment model developed by Conger and Kanungo (1988) which is a JD model relevant for the context of assembly line work which is qualified as repetitive and monotone. To fulfil this gap, we have established a conceptual model based on the empowerment model developed by Conger and Kanungo (1988) and theories of motivational needs. We conducted our thesis with the following research question as guideline:

What are the effects of the empowerment job design on the satisfaction of the blue-collars’ motivational needs in an automotive assembly line system context?

Our objective of this research question was: to study the impact of the empowerment Job Design techniques on the blue-collars’ motivational needs thanks to a case study as research design. This research is made independently to the effects of the context on the blue-collar’s motivation. We have conducted a quantitative study from a positivist and objectivist perspective in two MB (Mercedes-Benz) factories: ELC Étoile du Rhône in France (sample part factory) and Rastatt MB (engine factory) in Germany. Also, we have made questionnaires to distribute these to the blue-collars located in these two MB factories which allowed us to get 67 respondents. The set of 15 questions that constitutes our questionnaire dealt with how the empowerment JD techniques affect their motivational needs. Once the data were collected, we used SPSS for statistical analysis. We retrieved some specific analysis such as descriptive statistics, correlations and regressions. In addition to that, we used Cronbach’s Alpha to test the reliability of our results.

We measured the impacts of the empowerment JD techniques (participative management, feedback, modelling contingent/ competence based reward, goal setting and job enrichment) on the motivational needs (existence needs, relation-oriented needs and growth-oriented needs).

The results of our findings definitely went in the way that the empowerment JD techniques have a positive impact on the satisfaction of the blue-collars’ motivational needs. Indeed, our analysis indicated positive correlations of all of the empowerment JD techniques on the motivational needs except the JD technique “modelling contingent/ competence based reward”. Also, we found that the impacts on the relation-oriented needs (RN) were the strongest ones.

Thus, we hope that this paper will help the assembly line managers to become aware of their blue-collars’ potential in order to increase their performance and to improve their employees job satisfaction.

Keywords: assembly line system, automotive industry, blue-collars, empowerment, Job Design, motivation, motivational needs, need satisfaction.
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1. INTRODUCTION

In this part, we will first explain how we chose our research subject and its background. Then, we will clarify the theoretical background and the research gap that we found in this field. We will also formulate our main research question on which we will base all this paper. Then, we will explain the purpose of this research, delimitate our research area, and finally define the main concepts that we will use along this study.

1.1 Choice of subject

The choice of the subject is closely linked to our academic background. We, the authors of this paper, are two management students from Umeå School of Business (Sweden). Even if we come from the same academic field, we have different ways of thinking and personal interests. One of us is more attracted by the Human Resources (HR) field and the other one is more interested in the automotive industry. In order to satisfy our area of interest, we chose to write this paper on the automotive industry through a HR perspective. From this point, our reflexion led us to think about the workers’ motivation issues in assembly lines systems in the automotive industry.

This choice of research is also related to our professional experiences and personal interests in HR and the manufacturing industry. One of us had some working experiences in the automotive industry which was helpful not only to be familiar with this sector but also to find an appropriate factory to get our empirical data. Moreover, the other one had a work experience in an assembly line factory in a clothing company but not in the automotive industry. These experiences enable us to be particularly aware of the issues relative to employee’s motivation and employee’s work conditions in the assembly line system.

It was mainly developed during the second half of the 19th century at the time of the second industrial revolution and radically changed the modern industry (Tolliday & Zeitlin, 1987, p. 29). However, this new work method also brought new issues. Especially, one negative aspects of this method is the task repetitiveness (Melamed & al., 1995, pp. 29-30). The same authors highlighted the problem of work monotony, boredom and dissatisfaction of the workers. Indeed, in an assembly line, workers have to repeat constantly the same task. This had a negative effect on workers’ motivation (Nukta & al., 2011, p. 753). According to the same authors, the workers’ motivation is also an important condition for the managers to take into consideration as it affects the performance of the companies. Linking to the issues of demotivation of the workers in assembly line and reviewing literature in this field we became aware of certain theories, especially those about Job Design (JD) that we will use further in this paper that influence deeply the motivation of the workers and could represent a way to motivate more the workers in the assembly line context (Bauer & Erdogan, 2009). We support the idea that employees would prefer to participate actively in the decisions on the organization to complete their needs of self-actualization supported by the theories Y that we will explain further in the section 1.3. This aspect also motivated our choice of subject.

Furthermore, we chose to be specific on the automotive industry as the assembly line system definitely comes from this industry. Indeed, the concept was first created and
patented in 1901 by Ransom Olds (Tolliday & Zeitlin, 1987, p. 46). Inspired by Olds’ method, in 1913 Ford improved the assembly line concept (through suggestions of certain of his employees) by using the moving platform of conveyor system (Corday, 2014). Since this period, the assembly line concept has always been especially associated with the automotive industry all around the world. Even if it comes from the United-States originally, it is very well implemented in Western Europe with innovative work methods such as the Kaizen method consisting of always making the assembly line system more efficient (Miller-Wilson, n.d.). Moreover, through our preliminary researches, we found that one of the major challenges in the automotive industry is the extremely high competitiveness between the different automotive groups from all around the world, with customers constantly more demanding in terms of price-quality ratio (Mendes & Machado, 2014, pp. 1-2). In this context, the JD techniques appear as essential to improve the performance of the factories. Thus, in our researches, we were able to identify that it exists a lot of theories of motivation and JD techniques, but not about motivation and JD empowerment techniques, especially the ones developed by Conger and Kanungo (1988). This last aspect will be a key element in our research that we will be developed further in this paper.

In a more general point of view, the blue-collars’ motivation in assembly line system seems to be a very sensitive issue which attracted our attention (Chung, 1977, pp. 111-112). Indeed, we were especially aware of this aspect for our steps to obtain authorization from many factories in order to administer our questionnaire to their workers. We got many refusals as the workers’ motivation in this kind of context is perceived as a quite sensitive subject that managers were not really favourable to let us to study toward their employees.

Finally, even if none of us know if (s)he will work in the automotive industry, especially in an assembly line system, we thought, before starting this paper, that our findings in this paper could be helpful for us in many other kind of future job. Indeed, as future managers, we are interested in getting more knowledge to be able to motivate and to involve employees in any kind of work. Thus, all our findings about the way to motivate workers will enrich our managing abilities. Moreover, findings valid in an assembly line context, where the work can be perceived as especially repetitive and monotone, can be even more valid in context where the work is more attractive (Shackleton, 1981, p. 30).

1.2 Problem background

Assembly line was a great revolution at Ford’s time but it progressively evolved with the business environment. When it was first used in 1913, it had different imperatives than today. At Ford’s time, the objective was mainly to produce a very basic car as fast as possible according to History (2009). To serve this priority, assembly line managers had to think before all about how to make the processus producing more quantity, but not to think about the working conditions of their employees. This is all a question of JD. It consists on reducing employee alienation arising from repetitive and mechanical tasks (Bauer & Erdogan, 2009). JD is applied through various techniques such as: job enlargement, job enrichment, job rotation or job simplification (Hackman & Oldham, 1975, p. 160).
During the heyday of the JD research (1950 to 1980), JD theories were developed by some influential authors such as Hackman et al. for the Job Characteristics Model (JCM), claimed that enriched jobs make people more satisfied and definitely more motivated (1975, pp. 159-170). Management practices were influenced in that sense, giving more empowerment to workers. In fact, one of the contemporary approach to motivate employees through JD is the theory of empowerment (Conger & Kanungo, 1988, pp. 471-482). Moreover, many studies made the conclusion that the practice of empowering subordinates constitutes one of the principal elements of managerial and organizational effectiveness for performance (Biron & Bamberger, 2010, p. 163). It also reveals that the managerial empowerment strategies or practices increase productivity with the development of superior’s power and control with subordinates linked with participative management (Biron & Bamberger, 2010, p. 191).

Empowerment can be examined in many aspects as a rejection of the traditional classical model of management associated with Taylor and Ford (Wilkinson, 1997, p. 40). However, the degree of empowerment needs to be controlled by managers because the organization needs to keep strict rules not to obstruct productivity (Wilkinson, 1997, p. 52).

Nowadays, companies are confronted to more and more competitive pressure, they have to be more productive, more flexible, make better products (Mendes & Machado, 2014, pp. 1-2). Indeed, at Ford’s time, factories were mainly focus on productivity performance, and workers were mostly motivated by separable outcome (e.g. salary) (Ryan & Deci, 2000, p. 54). In this context made from the industrial revolution, there is no notion of workers having a right to say, the employers decide whether and how to empower the workers (Wilkinson, 1997, p. 40). However, in these recent years European automotive factories have to improve their performance toward not only more productivity, but also more quality and more flexibility (Parker & Wall, 1998, pp. 85-86).

Consequently, some automotive companies only focused on improving their “physical” productivity and do not take into account the intrinsic motivation of the blue-collars considering this not necessary. As a consequence, several companies decided to relocate factories in other countries (Docherty et al., 2009, p. 186). One of reasons which urge them to relocate is the fact that employees require new sources of motivation intrinsically and extrinsically to be satisfied (Parker & Wall, 1998, pp. 85-86). It is closely linked to the strategy of the automotive brands. It is for example the case for the production of the Clio 4 by Renault car which will be 70% produced in Turkey for cost savings in 2012 (Protard, 2012). But this strategy is closely linked to the image of the brand. The relocation to emergent countries could contrast with the image of MB who is viewed as high quality brand as German manufacturer producer. These choices to relocate or not depends a lot on the strategy of the automotive companies. This question is crucial because it determines the way they will manage the blue-collars. In fact, even today, the motivation of blue-collars from assembly line systems is not always highly considered by their managers (Docherty et al., 2009, p. 186).

Linked to our research, this is an important aspect to consider as our study spotlights the motivational needs of the blue-collars knowing that not every manager in assembly line factories do not take into consideration their motivation. We are conscious about the fact that everywhere is not the same consideration for their motivation.
1.3 Theoretical background and knowledge gaps

Many theories were conducted since the 1900s from researchers and practitioners in JD linked to motivation linked with scientific management developed by Taylor. JD and motivation were widely studied since the 1900s. Hackman et al, on their studies based on the Job Characteristics Model (JCM), claimed that enriched jobs make people more satisfied and definitely more motivated (1975, pp 159-170).

In addition to that, a general support for this model and its positive link with the motivation, job satisfaction, and performance outcome has been supported by Fried and Ferris in 1987 (p. 287). Dodd and Ganster studied the different correlations between feedback, autonomy and variety by manipulating these in labs (1996, p. 329). Renn and Vanderberg examined the relationships between job characteristics and job satisfaction for further research (Garg & Rastogi, 2006, p. 573). Love and Edwards claimed that different aspects such as work demands, job control and social support through job design lead to high productivity (Garg & Rastogi, 2006, p. 573). Sokoya concluded that job satisfaction is developed from a combination of jobs, work and personal characteristics (2000). The model of JD which are proposed by Garg and Rastog has taken a broader perspective with various dimensions such as job enrichment (JE), job engineering (JEng), quality of worklife (QWL), socio technical designs, the social information processing approach (SIPA) and the job characteristics approach to JD (2006, p. 572) . Clegg and Spencer’s extended their research by incorporating recent conceptions of the JD process which are knowledge, motivation, and trust into a cyclical and dynamic system (Challenger et al., 2011, p. 197).

In the section 1.2, the problem we defined was about the possibility for companies to apply for empowerment JD techniques. Relative to this question, we have chosen to focus mainly on the theories of empowerment which are part of new contemporary theories for JD and employee's’ motivation (Conger & Kanungo, 1988, p. 472). Empowerment is mainly focused on intrinsic motivation (Cox et al., 1984, p. 510) as developed in the SDT in the section 3.3.4. The term empowerment has been developed deeply in the 1980s and focused on task involvement, participation and autonomy and many models of empowerment were developed (David et al., 1955, p. 7). The theories rejected taylorism and fordism for a more human consideration of needs (Wilkinson, 1997, p. 40). Two broad sets of theories were developed to justify empowerment (Wilkinson, 1997, pp. 44-45). First, the theories developed by democratic humanism are usually seen as a response to the excesses of scientific management and problems of alienation (Melamed et al, 1995, p. 29). That is associated with the theories X and Y developed by McGregor (Wilkinson, 1997, pp. 44-45). In fact, theories X assume that employees dislike work and responsibility and are mainly motivated by financial reward (Wilkinson, 1997, pp. 44-45). On the other side, theories Y assume that employees would prefer to participate actively in the decisions on the organization to complete their needs of self-actualization. In fact, participation would satisfy human needs of self-actualization and human growth. That demonstrates a more positive view of human nature (Wilkinson, 1997, pp. 44-45).

Furthermore, a lot of models of empowerment processes were developed relative to the empowerment processes. In fact, Conger & Kanungo (1988, p. 471) developed an empowerment model which was linked to the effects of technics of job design on intrinsic motivation that we are going to explain more in the section 3.2.2.
Thomas & Velthouse proposed a cognitive model of empowerment focusing on intrinsic motivation (1990, p. 666). Besides, Robbins et al., (2002, p. 419) established a model of empowerment which highlights the importance of the environmental and individual-level elements as influence to the individual's work behaviour. More recently, Cattaneo & Chapman (2010, p. 646) developed a model of the process of empowerment in which the components of the model are personally meaningful and power-oriented goals.

Most of the researchers were focused on the JCM developed by Hackman et al. (1975, pp 159-170). Among the different researches about empowerment described previously in this section, we plan to use the empowerment model developed by Conger and Kanungo (1988, pp. 471 - 482) by studying the empowerment JD techniques described in section 3.2.2 because it is the model the most focused on the JD techniques.

In fact, we think that there is a theoretical gap that our thesis can be fulfilled. First, we did not find any theories which were linked to the theories of motivational needs that we will describe in the literature review section. Second, very small researches were evolved according to the empowerment model process developed by Conger & Kanungo (1988, pp. 471 - 482) especially with a practical way especially with the comparison of two different manufacturing factories in two different contexts. In fact, according to Robbins, et al., (2002, p. 419), “the dynamics of the empowerment process reflects the interaction between the localized work environment and the individual employee within the broader organizational context”.

The context is important to consider as factors which influence the motivation of the blue-collars in addition to the empowerment JD techniques on which we will focus on as we will explain in the section 3.1.

1.4 Research question

Considering our problem background, theoretical background and knowledge gaps, our master thesis aims to answer the following question:

What are the effects of the empowerment job design on the satisfaction of the blue-collars’ motivational needs in an automotive assembly line system context?

1.5 Purpose of the study

In our concern, the main purpose of this study is to measure the impact of the empowerment JD techniques on the satisfaction of the blue-collars’ motivational needs from automotive assembly line systems.

We aim to make a theoretical contribution by developing and testing a conceptual model based on our literature review. Moreover, from our view of looking, we would say that our research is primary addressed to the managers who could be interested in the effects of the empowerment JD techniques on the blue collars’ motivation.

Our study will focus on the empowerment JD techniques without taking into consideration the different elements of the context that can also influence the motivation of the blue-collars. These questions explore essential relations between some of our
main key concepts: motivation, empowerment JD techniques, and blue-collars (from assembly line system). Associating these concepts we expect to explore as completely as possible all the relevant aspects potentially contributing to answer deeper to our research question.

Finally, our study is limited in one type of industry which is the automotive industry, especially from two sites of MB factories, from a single kind of population who are the blue-collars in the assembly line system.

1.6 Definition of the concepts

In order to make understandable the reader to our research question and our purpose, we propose definitions of the main concepts:

*Assembly line:* “An arrangement of workers, machines, and equipment in which the product being assembled passes consecutively from operation to operation until completed. Also called production line” (Morris, 1982).

*Blue-collar:* workers in a factory or workshop who perform manual labour (Wickman, 2012). In this research, we are focusing of manual workers in assembly line but not on engineers. We actually focus on low qualified workers who are more concerned about repetitive and monotone tasks.

*Empowerment:* According to Conger & Kanungo, empowerment is defined as “a process of enhancing feelings of self-efficacy among organizational members through the identification of conditions that foster powerlessness and through their removal by both formal organizational practices and informal techniques of providing efficacy information” (1988, p. 474).

*Job design:* According to Rush (1971, p. 5), defined as the “specification of contents, methods and relationships of jobs in order to satisfy technological and organizational requirements as well as the social and personal requirements of the job holder”.

*Need satisfaction:* In this paper, the term “satisfaction” refers to the fulfillment of a motivational need or desire (Tamborini et al., 2010, p. 758).
2. SCIENTIFIC METHOD

This section is aiming for the readers to have a better understanding on our philosophical assumptions and to understand better the view we adopt to conduct this research. First, we will provide the preconceptions. Then, we will point out the philosophical aspects (ontological and deontological aspects) and the research approach we chose to apply for this research. Finally, we will clarify our choice of literature and criticize our sources.

2.1 Preconceptions

This section is aiming to provide an understanding of the authors’ preconceptions. Even if we are trying to be objective and to eradicate every biases linked to our backgrounds, it will still be subjective and influenced on different elements of our thesis in for example how we think, the choice of our research area, the way we interpret the results or the methods we chose (Bryman & Bell, 2011, pp. 30-31). According to Graziano & Raulin (2010, p. 82), the objectivity of the research is very important because it means that subjectivity of the research avoids the possibility for future researchers to replicate or to use the research as we explained in section 9.4. So, we aim to facilitate replication of this research. Therefore, being objective is extremely important for us that is the reason why we are continuously thinking to reflect our viewpoints critically in order to make the research independently as ourselves as much as possible. For instance, we cautiously paid attention on not to influence the respondents and only reported their answers about how they perceive the effects of the empowerment JD techniques on the satisfaction of their motivational needs.

Our educational background in France was mainly focused on marketing and Human Resources Management. In addition to that, we are currently doing a double degree for our last year of master in Umeå School of Business and Economics in Sweden. Moreover, regarding our professional experiences relative to our research area that could help for a better understanding and contribution to our research, we gained various types of knowledge during our academic years of studies. One of us has done some internships for an international car company in France (mechanic), UK (multi-departments experience) and Canada (finance) that allows us to get a broad viewpoint on different aspects of the automotive industry for a better understanding of this industry. Moreover, one of us has also done an internship in HR in an international luxury brand in France in recruitment and talent management which allows us to get a better understanding of the issues and challenges relative to HR management. Also, one of us has also experienced the work in an assembly line factory. The experience was in a context where the motivation was not really considered by the managers. The performance was the most important outcome. Relative to this research, that could help for a better understanding of the motivations and work conditions of the blue-collar workers.

The differences of courses and perceptions enabled us complementarities. In fact, it seemed for us important to consider our former and common educational and experiential background we acquired for the choice of our subject and also for the optimisation of the use of our knowledge. Consequently, we are conscious about the fact that our knowledge is mainly based on business and management point of view. But we tempted to broaden our subject with a psychological view of research because it is
important from our perception to consider this aspect for the relevance of our research. Also, regarding our personal motivation, we think that this aspect is crucial in management and not often considered in our studies even if it seems to be a very appropriate area to study. That enabled our personal knowledge enrichment. Also, we are also aware of the fact that our backgrounds will have an impact on the way we are conducting our research and on the different variables we are going to present in this report. Therefore, we hope that this study will be as objective as possible.

2.2 Philosophy of research

2.2.1 Ontology

Ontology is the nature of existence and the constituents of reality (Gray, 2004, p. 14). According to Saunders et al. (2009, p. 110) there are two aspects of ontology used in business and management research which are subjectivism and objectivism. The first aspect is objectivism and it portrays that social entities or existence are independent from social actors (Saunders et al., 2009, p. 110). From this perspective, the researcher’s view of the nature of reality is objective (Saunders et al., 2009, p. 119). The researcher’s viewpoint is mainly based on observations for the production of credible data and knowledge where we can use for the development of hypotheses (Saunders et al., 2009, p. 113). Linked to our business research, the social actors are the blue-collars whereas the social entities are composed by the elements in the context of assembly line in the automotive industry and its environment. Indeed, we would like to collect information about motivation of the blue-collars independently and objectively from the context of the factories considering the context as complex to study.

Based on the previous arguments and our choice of subject, we are aiming to observe the effects of reality on social actors. According to Saunders et al. (2009, p. 596), “observer as participant is the observational role in which the researcher observes activities without taking part in those activities in the same way as the ‘real’ research subjects.” The reality corresponds to the context of assembly line and the social actors are the blue-collars. Our goal is to report on how people perceive their motivation in the factory and what do they think about the impact of empowerment JD techniques on the satisfaction of their motivational needs without taking part subjectively in the observation, description, analysis and interpretation (Saunders et al., 2009, p. 596). In fact, they opinion about how they perceive their motivation is deeply influenced by their human beings and life time experiences. That means a subjective point of view. However, we are aiming not to influence them in their choices of answers but only to transcribe from our questionnaire their opinion without any subjectivity and interpretations as our analysis is mainly based on statistics. In this perspective, we reckon that the most adapted ontological aspect to our business research is the objectivist stance.

2.2.2 Epistemology

In this section, we discuss about our epistemological point of view which is referred to how we consider the social world in relation to natural sciences (Bryman & Bell, 2011, p. 15). It is also linked to the question about what is considered as acceptable knowledge in a field of study (Saunders et al., 2009, p. 112). There are three philosophical approaches which are interpretivism, realism and positivism in business
research (Bryman & Bell, 2011, pp. 15-20). The three perceptions depend on whether or not natural sciences are considered to be applicable to understand the social phenomena (Saunders et al., 2009, p. 113).

Finally, among the different epistemological approaches we explained previously, our approach is positivism which is often said as opposition as interpretivism (Gray, 2004, p. 21). Positivists support that social science world exists externally to the researcher (Gray, 2004, p. 21). The main inquiry should be based on scientific observations based on senses and objective views of the researchers (Gray, 2004, p. 21). Linked to our explanation of our research in the previous section 2.2.1, we do not aim to influence the blue collars on their perception but to observe the work context of the blue collars as the relationships they maintain with their managers, in which conditions they work, what kind of behaviour the blue collars adopt in some situations etc... Additionally, the process of thinking of positivism is mainly the test of theories and the development of laws (Bryman & Bell, 2011, p. 15). That is what we want to do developing a conceptual model as we will be able to test hypotheses based on our literature review.

Based on previous explanation of the different philosophical concepts, we consider that the most important adapted epistemological aspect to our business research is positivism as shown in the table 1. Furthermore, as we explained in the section 2.2.1, we observe objectively the work context of the blue collars and also we report their perceptions on their proper evaluation of how empowerment JD techniques influence the satisfaction of their motivational needs.

<table>
<thead>
<tr>
<th>Ontology</th>
<th>Objectivism</th>
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<tbody>
<tr>
<td>Epistemology</td>
<td>Positivism</td>
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<tr>
<td>Research Approach</td>
<td>Deductive Approach</td>
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<td></td>
<td>Quantitative</td>
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*Table 1: Philosophy of research (Bryman & Bell, 2007, p. 27).*

2.2.3 Research Approach and Research Method

As previously mentioned, we are going to adopt the objectivist and positivist approaches. That infers that we use the deductive approach because we would like to make some hypotheses about the positive impacts of the empowerment JD techniques on the satisfaction of the blue-collars motivational needs based on the theories we collected in the theoretical framework (Bryman & Bell, 2011, p. 11). Then, data collection allows the testing of these hypotheses for the rejection or the confirmation of these ones (Bryman & Bell, 2011, p. 11). Also, the deductive approach usually involves the quantitative data collection method that is more treated as a scientific approach whereas the inductive approach is used for qualitative data collection method that infers a deeper and close understanding of the research context (Saunders et al. 2009, p. 127). Based on the characteristics of the deductive method, we think that the most appropriate approach is the deductive approach. First, one of the main reasons is the fact that we would like to test the impact of the empowerment JD techniques on the satisfaction of blue-collars’ motivational needs based on theories we had previously studied and scrutinized (Bryman & Bell, 2007, pp. 4-25). Second, the other reason is the fact that
the quantitative study is appropriate because the motivation of the blue collars in the assembly line context is sensitive and we preferred to be careful and not to offend the blue collars’ sensibilities. Overall, we would like to collect quantitative data for statistical analysis to propose recommendations to future research linked to this research area (Bryman & Bell, 2007, pp. 11). Inductive approach is not appropriate in this context because it means the construction of new theories after collecting qualitative data (Bryman & Bell, 2007, p. 11).

2.3 Literature selection and criticism

In this section, we will explain how we did our literature research and chose our sources. First, we will point out the different sources of information we used. Then, we are going to provide the keywords we applied for our business research and finally make critics about our secondary sources.

Saunders et al. (2009, p. 271) state that researchers can interpret in a wrong way the meanings of an original source and miss the objective picture of reality when they use secondary sources. Thus, some aspects of the secondary references from our literature review may be considered and evaluated for example the overall suitability of the data or the measurement of the bias (Saunders et al. 2009, pp. 272-280). For this research we used original sources. Hence, we tried to avoid the use of the secondary sources. Thus, we were able with this way of searching to make more relevant research from primary sources, get different viewpoints focusing on one of our keywords or many of them.

To access to them, we used Umeå University portal to search the relevant articles or books inherent to our topic. Most of the time, we got accessed from Umeå University portal to many peer-reviewed articles from different research topics such as management (SAGE Journal, Wiley Online Library, Science Direct, Taylor & Francis online), production (International Journal of Production Research) and psychology (PsycArticles) Also, to complete our research we used Google scholar and books and EBSCO (Business Source Premier) which allowed us to expand the research area to other articles. In general, we prioritized the usage of journals from academic journals or professional journals to optimize the quality of our research. Indeed, according to Saunders et al., (2009, p. 70) some of the articles are more suitable and we can rely on them because they are evaluated by academic peers. That is the reason why we proceeded in this way to construct our literature review. However, we think that some of our sources are a little bit old and so less suitable by the usage of the time but we considered that they are still relevant to our research because these are used as basis for many other theories and it is considered as one of the most influential. Moreover, in our subject, most of the JD studies were developed during the heyday of the JD research that could explain the sources between 1950 and 1980.

Regarding the keywords we first defined and listed the principal keywords relative to our domain of research by using Umeå university portal, EBSCO portal and the peer-reviewed articles portal. Our main keywords without considering all the synonyms were job/work design, job characteristics AND motivation, self-determination theory, motivational needs AND assembly line AND automobile industry, blue-collar(s) AND work conditions, work performance AND Human Resources factory AND blue-collar work conditions. We have used these words individually and also combined them for a more complete research. We have also considered the synonyms in our keywords list in order to maximise the possibility to reach a large number of relevant articles as much as possible.
3. LITERATURE REVIEW

In this section, we aim to review the literature and the main topic that will be used in our study. We start by introducing the context, which is an important section as it is an essential part of our reflexion. Then, we will expose the work conditions of the assembly line blue-collars. After that, we describe two very important sections about the job design theories and the theories of motivation which are at the base of all our reflexion in this paper. Finally, we will develop our conceptual model which will be based on our hypotheses. These hypotheses will be described through two motivational programs exposed in a last section.

3.1 The context

3.1.1 The assembly line system

Europe is among the region of the world paying the most attention to the wellbeing of its workers (Drobnič et al., 2010, p. 206). However, it is far to be the same thing all around the world. For instance, in Brazil workers are far to benefit from the same kind of working conditions compared to Europe (French, 2002, p. 308). Thus, workers do not have the same degree of exigency to satisfy their motivational needs according the conditions of their global environment (Shabbir et al., 2011, p. 53). For instance, teen workers in Brazil will not have the same satisfaction criteria than highly skilled and educated European workers. The satisfaction criteria mainly depend on the comparison between the working conditions of the worker with the common working condition in their region (Yager, 2010, p. 307). Thus, the working conditions depend on which region of the world it is about, but also on the cultural practices of the country, the cultural practices of the company, and even of the global conjuncture. For instance, after the crisis of 2008, it has been revealed that the working conditions quality (assembly line included) in certain European countries, especially affected (Greece, Portugal, Spain…), have been deteriorated (Drobnič et al., 2010, p. 212). Indeed, in some countries, even if they are quite developed, the working conditions is still considered as being quite low, like China, because the work culture there, is specific (Weil, 2006, p. 27). By the same way, certain companies have been criticized about their work conditions while they are very profitable and powerful, like Nike in Pakistan (Locke et al., 2007). In addition, a very local example is the Volvo Truck factory of Umeå. Indeed the site is confronted to serious preoccupations as it is actually moving its trim assembly to Gothenburg (south of Sweden, which provoked quite a lot of dismissal for employees from the assembly line. Thus the blue-collars’ satisfaction also depends on the strategy of the company and its managerial practices (Wang & Hsieh, 2011, p. 537). Indeed, the employee satisfaction also largely depends on managerial practices making employees more or less subject of stress, insecurity, recognition, etc… (Yeh & al. 2009, p. 1408).

Finally, because of the technology progress, the profile of assembly line workers change and they become more and more skillful. For this reason factories have to pay additional attention on their job satisfaction in order to keep the best employees (Cochran & Lin, 1992, p. 1683). For instance certain factories are part of competition in order to elect which is the “best” automotive factory of the year, which is the case of one of our sample factory (Rastatt).
3.1.2 Management practices in European factories nowadays

As mentioned previously, we conduct this study through two automotive factories: one in France and one in Germany. These two companies have the particularity to be from the same German car manufacturer (MB) but they are still quite different from each other about: the culture, the managerial practices etc… For instance, the trade unions had different relationships with board of directors (BOD) between the two sites (Thomas, 2013, pp. 21-22). Consequently, the managerial practices also differ from the two factories. Indeed, among the different sites we contacted, certain could not accept our request because of too complex negotiations between the managerial committee and the trade unions. Moreover, during our visit of our two sample factories we have been able to notice different mentalities among the blue-collars according to the culture of their company: individual thinking versus communitarian and cooperative with managers.

The industrial sector is a fast changing environment where the competition is more international, technology is developing rapidly, the mass customization is being more important resulting in changing in demand patterns, more sophisticated buyers and highly volatile market (Bengtsson & Olhager, 2002, p. 13). Arnan and Ward state that the manufacturing environment is turbulent and uncertain which flexibility represents a significant strategic weapon (2004, p. 369).

Practitioners and academics agree that performance in a dynamic environment depends on the resources of the organisations and how they use these resources (Sanchez, 1995, p. 137). One of the most important resources are the human resources (Ketkar & Sett, 2009, p. 1009). According to Ketkar and Sett, (2009, p. 1038), the human resources are one of the most valuable resources for performance and can represent a significant competitive advantage mainly in highly competitive advantage. According to Croci et al, the way the workers are managed and the choice of management policies in the factory determine its level of performance (2000, p. 243). The studies of Croci et al., compare several workforce management context faced to different amount of workers (2000, p. 244). Nowadays, the greater workers utilization is not only an advantage of cost reduction but also organizational considerations such as job enlargement/enrichment policies, workers greater responsibility and motivation and a more flexible workforce (Croci et al., 2000, p. 244). In fact, one element that could be part of business performance is the manufacturing flexibility (MF) (Mendes & Machado, 2014, p. 1).

The issue of flexibility is gaining of growing importance for manufacturing strategy in many industries in production or operation management (Mendes & Machado, 2014, p. 1). Moreover, flexibility is a strategic option to deal with environmental threats with the ability to anticipate and respond quickly to the demand, fostering frequent and rapid new product development (Mendes & Machado, 2014, p. 2). Linked to performance, Chung, (1977, p. 113) supports that high motivation and ability contribute to a high performance.
3.1.3 Work conditions of blue-collars in assembly line system

In this section, work conditions explain the main characteristics of the blue-collars’ work and enable us to understand better the reasons why JD techniques could be a solution to motivate them.

The assembly line work is associated to boredom, repetitive tasks (Shackleton, 1981, p. 30), monotony, stress and sickness (Melamed et al, 1995, p. 29). All of these aspects affect performance of the organization because it causes absenteeism and demotivation on the workers that lead to a less quality outcome (Hanebuth et al., 2006, p. 29). These have psychological and physical impacts on blue-collars. Monotony of the task and work conditions such as noise, lead to sickness and physical risk such as coronary heart disease or blood pressure (Hanebuth et al., 2006, p. 29). Relative to boredom, Bosch et al. pointed out that usually people think a repetitive job is automatically a boring one but that is not (2012, pp. 863-865). According to Fenichel (1967, p. 352), “boredom arises when we must not do what we do, or must do what we do not want to do”. Also, Rosseel (1974, p. 70) underlines the idea boredom is linked to the impossibility to do an alternative activity in work situation. Indeed, boredom is associated to an individual’s subjective experience and individual’s reaction to the work environment whereas repetition and monotony are referred to the characteristic of a task (Bosch et al., 2012, p. 863). Finally, relative to stress, the studies conducted by Melin et al. (1999, p. 47) demonstrated that a more flexible assembly line work organisation induced less stress.

Then, Shackleton (1981, p. 30) underlines the discrepancy between competence and task difficulty. He claims that the large difference between these two aspects lead to boredom or anxiety. In fact, a too easy task leads to boredom, a task too difficult in relation to competences lead to anxiety and a task which slightly exceeds competence is presented as a challenge where the worker can experience the enjoyment of activity. There are conceptual distinctions between “chronic boredom” with “responsive boredom” (Bosch et al., 2012, pp. 863-866). Chronic boredom is referred to the alienation of the tasks and is described as a chronic and long-time feeling of boredom (Shackleton, 1981, p. 30).

Industrial studies demonstrated that there are clear correlations between repetitive work and fatigue and also physical consequences (Bosch et al., 2012, p. 863). Wyatt and his collaborators claim the idea that the main obstacle to repetitive task is not fatigue but boredom. There are different ways to alleviate boredom in industry: the use of music, alternating tasks, pauses... However, the fundamental techniques such as job enrichment and job enlargement have been approved too (Bergum, 1962, pp. 425-427). Also, the possibility to give to the workers more freedom to plan the job or to give their opinion on what they do, may increase job recognition, job satisfaction and lead to less supervision (Hu et al., 2010, p. 317). Similarly, such methods reduced absenteeism, labour turnover and improve the quality and quantity of the output (Hu et al., 2010, p. 317). However, job enrichment does not seem to be appropriate to all type of workers. For instance, it does not suit with very poor job which tend to be the most boring. One of the solution supported by Shackleton, could be to automate the manual work where it is possible and to increase the managerial ways to decrease boredom such as job rotation (1981, p. 35).
Besides, the work conditions of the workers affect differently the blue-collars according to their personality and their gender (Davies et al., 1969, pp. 453-457; Cox et al., 1984, pp. 499-510). An aspect underlined by Davies and his colleagues (1969, pp. 453-457), is individual differences linked to personality between introverts and extroverts. The dimension of inversion-extraversion is linked to the overall efficiency of work (Davies et al., 1969, pp. 453-457). The performance of introverts is generally superior to extroverts because they behave differently (Davies et al., 1969, pp. 453-457). Indeed, extroverts need more variety in tasks faced to the situation of repetitive tasks (Davies et al., 1969, pp. 453-457). Also, the studies of Cox et al. (1984, pp. 499-500), shed light that there is a difference of perception for task repetitiveness between women and men. Indeed, women appraised these tasks as less boring than men (Cox et al., 1984, p. 510).

Furthermore, the ergonomy of the design of operational tasks is also part of their well-being. In fact, the way the different tasks are organized and coordinated (Croci et al., 2000, p. 245). It is for example the number of tasks done by machines or the duration of the operations for manual tasks (Croci et al., 2000, p. 245). The studies of Croci et al. showed the importance of job enlargement conditioned by the design of factories instead of job specialization (2000, p. 245).

3.2 Individual theories of job design

This part is relative to the theories of JD. Rush (1971, p. 5) JD defined as the "specification of contents, methods and relationships of jobs in order to satisfy technological and organizational requirements as well as the social and personal requirements of the job holder". To go deeper from the different aspects of this definition, we are going to develop first, the early research of the JD from the industrial revolution which conditioned the following research of JD (techniques and models). Then, we will develop the principal theories (techniques and models) we consider the most important for our research. To do that, we will mainly focus on the design on individual job level and not group job level which are more appropriate for our research. At it concerns directly to the individual perception of the blue collars on their motivation and not their perception on the motivation of other individuals.

3.2.1 Job design techniques

According to Gallagher and Einhorn (1976, p. 359), two broad categories of techniques of JD have been developed aiming at engaging the motivational forces workers’ egoistic needs through the establishment of job characteristics. The first group evolved with job enlargement and job rotation aim to increase the intrinsic motivation by increasing the variety in tasks (Gallagher & Einhorn, 1976, p. 360). The second group has been developed fostering intrinsic motivation is job enrichment as granting increased responsibility in work situation to foster intrinsic motivation (also called vertical job enrichment) (Gallagher & Einhorn, 1976, p. 360).

Regarding the first group of techniques of JD, a job enlargement consists of increasing employee motivation by expanding job tasks to add more variety from a central task combining two or more simplified jobs to lengthen the work cycle (it is also called horizontal job enlargement) (Möller et al., 2004, pp. 19-20). In other words, it consists
of giving different kind of tasks to the employees instead of limiting their activities to a small number of tasks aiming at reducing boredom and monotony (Herzberg, 1968, p. 55).

Closely related to job enlargement approach is job rotation (Möller et al., 2004, pp. 19-20). Job rotation means the process of moving at regular intervals of time by operators to perform different kind of tasks (Möller et al., 2004, pp. 19-20). The benefit of this process is to reduce boredom from repetitive movements and to increase flexibility of the workforce (Parker & Wall, 1998, p. 7). Nevertheless, job rotation does not reduce the specialization and job content (Parker & Wall, 1998, p. 7).

Relating to the second group, in contrast with job enlargement and job rotation, the goal of job enrichment is to emphasize the discretion and autonomy of the job (Patterson, West & Wall, 2004, p. 650).

Thus, it reveals the vertical division of labor (Gallagher & Einhorn, 1976, p. 360). Job enrichment consists of increasing the degree of responsibility of the employees (Patterson et al., 2004, p. 641) such as decisions about scheduling and the allocation of tasks (Parker & Wall, 1998, p. 20). Usually, this approach implies the raise of difficulty and complexity of the job. Also, the variety of tasks that job enlargement implies are often increased (Patterson et al., 2004, p. 650).

Finally, theory supports that job satisfaction and productivity will be higher when both job enlargement and enrichment are jointly applied to design work systems than when they are applied individually (Docherty et al., 2009, p. 186). Industrial experiences with this work system are generally favourable but with mixed results (Docherty et al., 2009, pp. 186-187). In spite of the enthusiasm generated by the new trend in work systems, many jobs are not enriched, and only a small portion is affected by this trend (Chung, 1977, p. 205). Enriching a job is a difficult and expensive proposition because it has to satisfy a number of individual and organizational constraints before it elicits motivational forces (Patterson et al., 2004, p. 650).

3.2.2 Job design models

The Job Characteristics Model (JCM)

Compared to the job design techniques we mentioned in the section 3.2.1, some researchers developed models of job design from a mechanical view gathering job design with motivational aspects. One of the most influential mechanical model is the one developed by Hackman and Oldham (1975, pp 161-162). The same authors identified five core job characteristics that relate to motivation and satisfaction of employees: skill variety, task identity, task significance, autonomy and feedback from the job (figure 1). Skill variety refers to the degree the job requires different skills, task identity is the degree the work is identified as a piece of work rather than simply a part, task significance is the measure of the impact on other people inside or outside the organization, autonomy refers to the possibility for jobholders to exercise choice and discretion in their work and feedback is linked to the information jobholders can get to assess their performance (DeVaro et al., 2007, p. 986).
The core job characteristics produced “critical psychological states” with skill variety, task identity and task significance affecting experienced meaningfulness of the work, autonomy affecting experienced responsibility for outcomes of the work and feedback influencing knowledge of the results of the work activities (Hackman & Oldman, 1975, pp. 161-162). On the whole, these critical psychological states affect four different outcomes: high internal work motivation, high “growth” satisfaction, high general job satisfaction and high work effectiveness (figure 1). Finally, the JCM demonstrates the growth need strength or the importance for an individual to be challenged and get personal development (DeVaro et al., 2007, pp. 986-999).

Figure 1: The Job Characteristics Model (Hackman & Oldham, 1975)

Empowerment Process Model

One of the contemporary approach to motivate employees intrinsically through job design is the model of empowerment process proposed by Conger & Kanungo (1988, pp. 471-482). That means the empowerment JD underlines intrinsic motivation (Conger & Kanungo, 1988, pp. 471-482). According to Conger & Kanungo, empowerment is defined here as “a process of enhancing feelings of self-efficacy among organizational members through the identification of conditions that foster powerlessness and through their removal by both formal organizational practices and informal techniques of providing efficacy information” (1988, p. 474). Moreover, many studies have been done to conclude that the practice of empowering subordinates constitutes one of the principal elements of managerial and organizational effectiveness (Robbins et al., 2002, p. 419). It also reveals that productivity grows with the increasing of superior’s power and control with subordinates (Conger & Kanungo, 1988, p. 471).

The roots of empowerment comes from power and control in management (Seibert et al., 2004, p. 332). It can be seen as two different ways: empowerment as a relational construct and empowerment as a motivational construct (Conger & Kanungo, 1988, pp. 472-473). In the case of the relational construct, it is seen power as a function of dependence and/or interdependence of actors (Seibert et al., 2004, p. 332). Indeed, power arises when an individual is contingent to his own behaviour and to the others too.
In the case of empowerment as a motivational construct, it is considered as an internal urge to control and influence people (Conger & Kanungo, 1988, p. 473). It is linked to an intrinsic need for self-determination or a believer of a condition for self-efficacy developed by Deci (1975). It is also linked to internal needs illustrated by Maslow with the need for power and the need for self-actualization and the need for power (Seibert et al., 2004, p. 332). Empowerment is a motivational construct because it is considered as the ability to enable rather than to delegate (Conger & Kanungo, 1988, p. 474). In fact, to “empower” means to strengthen the belief that an individual is convinced by his self-efficacy (Conger & Kanungo, 1988, p. 474).

The empowerment process highlights five stages that include the psychological state of empowering experience, its antecedent conditions, and its behavioral consequences (Conger & Kanungo, 1988, p. 474). The first stage underlines the conditions which are responsible for powerlessness in an organization among subordinates; the stage 2 is the different techniques and managerial strategies for removing all the external conditions responsible for powerlessness but also providing self-efficacy information among subordinates described as goal in stage 3. As the result stage 2, individuals feel empowered in stage 4 and the behavioral effects on employees are described in stage 5 (Conger & Kanungo, 1988, p. 474). Consequently, employee empowerment might be understood a set of managerial practices (sharing authority, resources, rewards with employees) affect work outcomes (quality, productivity, customer satisfaction) and also affect them cognitively (motivation, performance) (Conger & Kanungo, 1988, p. 474).

Regarding the use of empowerment JD techniques, it aims to distribute power and responsibility to the lowest level in an organisation to get individuals involved in the process of decision making (Cho, 2008, p. 21).

- Participative management is a managerial strategy to share decision making authority between workers and leaders (Cho, 2008, p. 21). It also infers information sharing and group commitment to decision making (Cho, 2008, p.
It emphasizes the human relations in all levels of the hierarchy (Cho, 2008, p. 21).

- Goal setting is based on the goals that workers are encouraged to achieve aiming to raise their motivation. Goal setting is a technique pioneered by Locke (1968, p. 157), affects performance in four ways:
  - focuses attention
  - mobilises effort in proportion to the demands of the task
  - enhances persistence
  - encourages the individual to develop strategies for achieving their goals

- Feedback system is the process workers receive information from coworkers or supervisors or the organization about elements relative to their personal efficacy and performance in the organization (Conger & Kanungo, 1988, pp. 478-479; Cho, 2008, p. 33). Feedback is relative to participation because it increases the level of communication with managers (Cho, 2008, p. 34). The effectiveness of the feedback system determines also the performance to the workers because it provides accurate diagnose (Cho, 2008, p. 34).

- Modelling contingent/competence base reward is a motivation based system to reward job well done and well achieved work to enhance to encourage continuous efficacy and productivity (Smith & Media, n.d.).

- Job enrichment consists of increasing the degree of responsibility and autonomy of the employees (Gallagher and Einhorn, 1976, p. 360) such as decisions about scheduling and the allocation of tasks (Parker & Wall, 1998, p. 20).

In order to make easier the use of these techniques we will use codes (abbreviations). These codes are summarized in the following table (table 2). The use of these codes will also help the reader to understand how we use these techniques further in this report. We formulated these codes in order to make it easy to remember for the reader. Indeed, JDT refers to Job Design Techniques. Then the other letters refer to each technique such as PM for Participative Management.

<table>
<thead>
<tr>
<th>Empowerment JD techniques</th>
<th>Codes</th>
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<tbody>
<tr>
<td>Participative management</td>
<td>JDT-PM</td>
</tr>
<tr>
<td>Goal setting</td>
<td>JDT-GS</td>
</tr>
<tr>
<td>Feedback system</td>
<td>JDT-FS</td>
</tr>
<tr>
<td>Modelling contingent/competence base reward</td>
<td>JDT-MCBR</td>
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<tr>
<td>Job enrichment</td>
<td>JDT-JE</td>
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*Table 2: Empowerment JD techniques codes*

### 3.3 Theories of motivation

Facing to this context in the industrial sector, the blue-collars’ motivation appears as a key challenge of managers in the future as they will have to always find more innovative motivational programs by inducing employees to improve their work performance (Chung, 1977, p. 4). Thus, the notion of motivation is a behaviour state, which has to be studied from a psychological perspective, cannot be omitted by managers (Madsen, 1968, p. 55). Even if it is a psychological concept, it directly concerns the blue-collars’ working conditions and the JD techniques (Grant, 2007, p.
394). For the beginning of the assembly line method in the automotive industry, managers did not pay so much attention on this aspect. However, the current conjuncture makes things to change and employees’ motivation becomes more and more an important element which has to be considered in the JD techniques (Grant, 2007, p. 394). Among the different kind of JD, we saw previously (section 3.5.3) that the empowerment JD model was not so much developed comparing to most of the other models and we think it could be interesting to see how related it could be with the motivation in an assembly line system. Indeed, we saw that it is a model particularly addressed toward intrinsic motivations, which fit with our research ambition. In this perspective, we will have first to understand better how the motivational concept works. This is why we will: first expose the main motivational issues, then we will explain what the motivational needs are and how essential they are, and finally we will develop two main motivational theories providing concrete illustrations of how the satisfaction of motivational needs are used in the managerial practices.

### 3.3.1 Motivational issues

In all cases of individual success and organizational effectiveness, motivation is a determinant element (Lazarus & Fowler, 1991, p. 819). It constitutes one of the key challenges of managers in the future as they will have to find and to administer innovative motivational programs by inducing employees to improve their work performance (Anselme, 2010, p. 304). In order to administer appropriate and efficient motivational programs, managers will have to get a better understanding of motivational theories (need theories, incentive theories...) because of more complex set of motivational determinants (Lazarus & Fowler, 1991, p. 820). Nonetheless, it has to be considered that these theories require to be translated into workplace programs (Weiner, 2010, p. 29). The effectiveness of these programs will depend on their ability to balance demand of various motivational determinants such as task accomplishment, reward to task performance, and matching incentive to employee needs (Lazarus & Fowler, 1991, p. 830). It is essential to correctly diagnose employee characteristics, the nature of their jobs, the kinds of rewards they receive, and the organizational climate in order to develop effective motivational programs (Weiner, 2010, p. 29).

### 3.3.2 Need theories of motivation

In order to understand what motivation is, it is essential to understand what the motivational needs are, especially as we will base our future measures on it. Needs can be defined as internal stimulus that energize or cause people to interact with their environment to satisfy their dominant needs (Bipp & Van Dam, 2014, p. 157). In this field, most of the theories come from Maslow who is indisputably the major source of reference (figure 3). As it is quite an “old” author, a lot of theories have developed since in order to adapt it better to the current context. For this reason, we chose to base our literature on more recent sources, which were originally based on Maslow’s concept, but who adapted it in accordance with the context and the period. According to these more contemporary authors, the motivational needs can be classified into three main categories: existence, relation-oriented, and growth-oriented (Gunnell et al., 2014, p. 19).
Firstly, the existence needs include physiological and security needs (Gunnell et al., 2014, p. 19). These needs are primarily satisfied by such extrinsic reward as pay and job security and become less important as motivators when they are reasonably satisfied (Gunnell et al., 2014, p. 20). A good example of existence need which is appropriated to our study is the need of money to exist.

Secondly, the relation-oriented needs include affiliative motive, power motive, competitive motive, and are satisfied through interaction with other people (Gunnell et al., 2014, p. 20). The affiliative motive corresponds to the sense of belonging need, with the company where the worker is working in (Rettig, 1966, p. 653). About, the power motive it refers to the autonomy feeling need (Hofer et al., 2010, p. 380). Finally, the competitive motive comes to the competitiveness need (Chang & Wong, 2008, pp. 883-884). Contrary to the other needs which appeal to man’s rationality and goal-orientation, the relation-oriented needs involve feelings and emotions (affective motivation) (Gunnell et al., 2014, p. 20).

Thirdly, the growth-oriented needs include the desire for being competent, achieving and self-actualizing (Gunnell et al., 2014, p. 20). The desire for being competent corresponds to the skill development need (Michelini et al., 1981, pp. 391-391). Concerning the desire for achieving it refers to the need to face new challenges (Freund & Holling, 2011, p. 723). Finally, the desire for self-actualizing comes to the need to express its potential (Friedlander & Clark, 1966, p. 143). These needs can be satisfied through interesting and challenging tasks (Gunnell et al., 2014, p. 20). Need theories of motivation occupy a central position in motivational studies (Bipp & Van Dam, 2014, p. 157). Nevertheless, theses needs alone cannot explain the complex motivational processes through which dominant needs are expressed in specific behaviours (Bipp & Van Dam, 2014, p. 161). These specific behaviours are also governed by external stimulus or incentives and many determinants other than needs (Bipp & Van Dam, 2014, p. 157).

Finally, it is important to understand in what are these needs as we will base all our measures on it. So to help to visualise each section of these motivational needs, we summarize how it is organized in the table below (table 3). The existence needs are
composed of physiological and security needs, but we will mainly focus on the second one as it is more appropriate to our research. Then the relation-oriented needs are composed of: the affiliative motive, the power motive and the competitive motive. Finally, the growth-oriented needs are composed of the desires to be: competent, achieving and self-actualizing.

<table>
<thead>
<tr>
<th>Existence needs</th>
<th>Relation-oriented needs</th>
<th>Growth-oriented needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Physiological needs</td>
<td>- Affiliative motive</td>
<td>- Competence need</td>
</tr>
<tr>
<td>- Security need</td>
<td>- Power motive</td>
<td>- Achieving need</td>
</tr>
<tr>
<td></td>
<td>- Competitive motive</td>
<td>- Self-actualizing need</td>
</tr>
</tbody>
</table>

*Table 3: Motivational needs*

In addition, in order to make easier the use of these needs we will use codes. We summarize these codes in the table 4. We did our code in order to help the reader to remember which need it is about. For instance, RN-P refers to the Relation-oriented Need Power motive. We also made our codes in order to distinct each type of needs: EN (existence needs), RN (relation-oriented needs), GN (growth-oriented needs).

<table>
<thead>
<tr>
<th>Needs</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existence needs</td>
<td>EN-S</td>
</tr>
<tr>
<td>- Security need</td>
<td></td>
</tr>
<tr>
<td>Relation-oriented needs:</td>
<td>RN-A</td>
</tr>
<tr>
<td>- Affiliative motive</td>
<td></td>
</tr>
<tr>
<td>- Power motive</td>
<td>RN-P</td>
</tr>
<tr>
<td>- Competitive motive</td>
<td>RN-C</td>
</tr>
<tr>
<td>Growth-oriented needs:</td>
<td>GN-C</td>
</tr>
<tr>
<td>- Competence need</td>
<td></td>
</tr>
<tr>
<td>- Achieving need</td>
<td>GN-A</td>
</tr>
<tr>
<td>- Self-actualizing need</td>
<td>GN-SA</td>
</tr>
</tbody>
</table>

*Table 4: Needs’ codes*

### 3.3.3 Incentive theories of motivation

Having considered the motivational needs, a lot of motivational theories have been developed. The incentive theories of motivation are among the most commonly used and can affect the satisfaction of all the types of motivational needs. The incentive theories provided explanation how motivational needs are used in the managerial practices.

These incentive theories are based on internal theories which search for behavioural causes (Ma et al., 2014, p. 194). The study of need and internal theories may help managers to better understand behaviours logic. However these theories do not provide those working principles and techniques with which they can formulate productive incentive system (Ma et al., 2014, p. 194). Managers cannot directly influence the behaviour of their employees by changing their needs and perceptions (Ma et al., 2014, p. 194). Nevertheless, they can indirectly influence them by effective organizational incentives (Ma et al., 2014, p. 194). One of the most common examples in the reality is the financial incentive (Promberger & Marteau, 2013, p. 950). Its effectiveness depends on the match of the type and amount of a pay system with employee needs (Promberger
Incentive rewards can be measured and paid to employees on an individual, group, or company wide basis (Promberger & Marteau, 2013, p. 950). Individual pay plans are generally effective in encouraging individual work motivation where job performance can be measured individually in quantifiable output units (Promberger & Marteau, 2013, p. 950). Group plans can be productively applied to task situation requiring a high degree of interaction among group members and where group members' performance cannot be measured individually (Promberger & Marteau, 2013, p. 950). Companywide plans are utilized to attract and maintain valuable employees, and its benefits are usually related to the long-term performance of the organization (Promberger & Marteau, 2013, p. 950).

However, the effectiveness of a pay system not only depends on how it is designed but also how it is managed (Promberger & Marteau, 2013, p. 950). For instance, when employees increase productivity to maximize their financial gains under an incentive system, management may be tempted to adjust the pay rate or to raise the production standards (Promberger & Marteau, 2013, p. 950). If this adjustment is made without the agreement of the employees, if can often create distrust between management and workers (Promberger & Marteau, 2013, p. 950). When distrust and suspicion prevail in an organization, no pay plans can function (Promberger & Marteau, 2013, p. 950).

### 3.3.4 Self-determination Theory

Another unavoidable motivational theory is the self-determination theory (SDT) which also directly related to the motivational needs, especially the autonomy need. It concerns people’s inherent tendencies and innate psychological needs, and focuses on the degree to which individual behaviours are self-motivated and self-determined (Ryan & Deci, 2000, p. 68).

SDT makes a key distinction between autonomous motivation and controlled motivation (Gagné & Deci, 2005, p. 333). Autonomy means to act by willingness to making a choice (Milyavskaya & Koestner, 2011, p. 387). For example, intrinsic motivation appeals to autonomy, like doing an activity because it is fun or interesting (Milyavskaya & Koestner, 2011, p. 387). At the opposite, controlled motivation means acting with a sense of pressure (Gagné & Deci, 2005, p. 334). For example, extrinsic motivation is a controlled motivation, like using rewards system (Gagné & Deci, 2005, p. 334). SDT supports that behaviors can be all characterized in terms of the degree to which they are autonomous versus controlled (Gagné & Deci, 2005, p. 334). Both of them are intentional and stand in contrast to amotivation (lack of motivation) (Gagné & Deci, 2005, p. 334).

SDT postulates that the degree to which workers are autonomously motivated for their job depends on the supports for autonomy in their work contexts and their own autonomous causality orientation, and similarly for their controlled motivation and their amotivation (Milyavskaya & Koestner, 2011, pp. 387-388).

### 3.4 Conceptual model

As just mentioned above, here we will develop our conceptual model aiming to expose more clearly our hypotheses formulated according to our literature review. These
hypotheses are especially based on the relationship between the empowerment JD techniques (section 3.2) and the motivational needs (section 3.3.2). We chose to focus on the empowerment JD techniques, among all the JD models, as we saw it is not a very developed model which could be relevant to use in a context of assembly line system and to test this model in our research (section 3.2.2).

Besides, we also chose to focus on the motivational needs as they constitute the foundation of all the motivational theories and programs (section 3.4.2). Thus the thought that the best way to explore the impact of the empowerment JD techniques on the blue-collars’ motivation from assembly system was to study this impact on the satisfaction of their motivational needs.

Furthermore, we chose to focus our paper on the model proposed by Conger & Kanungo (1988, pp. 471-482) as it was not so much used until today, contrary to other theories, and it highlights the importance to give responsibilities to employees. We think this theory particularly relevant for the context of assembly line which induces repetitiveness and boredom to give more autonomy and responsibility to the blue-collars to motivate them (Shackleton, 1981, p. 30) as explained in the section 3.1.3. As it is showed in our conceptual model, the empowerment model is composed of five main techniques: JDT-PM, JDT-GS, JDT-FS, JDT-MCBR, JDT-JE (Conger & Kanungo, 1988, p. 474). All of these techniques lead to “empower” the workers’ job, which means to provide them more autonomy and responsibilities (Shackleton, 1981, p. 30).

Considering what we found in the theory we made several correlations between these empowerment JD techniques and the motivational needs: existence needs (EN), relation-oriented needs (RN) and growth-oriented needs (GN). By this way, we would like to test the positive impacts of the empowerment JD techniques on the satisfaction of the blue-collars’ motivational needs from the model proposed by Conger & Kanungo (1988, pp. 471-482), by proposing a conceptual model as seen in the figure 4. In other words, our goal is to determine if the positive correlations illustrated in our hypotheses (section 3.5) correspond to the reality through our study made in two factories.
3.5 Programs using empowerment JD techniques on the satisfaction of motivation

In agreement with certain motivational theories, many motivational programs have been elaborated using JD concepts in order to increase workers’ motivation. We are going to present two of these programs: the innovative work system and the management-by-objectives. We chose these two specific programs as they develop the use of empowerment JD techniques on motivation.

On the one hand, the innovative work system consists of designing new work systems through three major techniques: flexible work schedules, job enlargement, and job enrichment (Chung, 1977, p. 189). Firstly, flexible work schedule allows workers to fulfill their work commitment in a more flexible manner or in fewer days than the fixed work schedules (four-days work week or flexitime) (Rogier & Padgett, 2004, p. 191). Secondly, job enlargement adds more task elements to an existing job (Möller et al., 2004, p. 20). A properly designed job can have such motivational elements as task variety, meaningful work module, ability utilization, man-paced control, and feedback (Sumukadas and Sawhney, 2004, p. 1013). Among these motivational elements there is the feedback system (JDT-FS) which is an empowerment JD technique as we could see in the part 3.4.2. It can be a very powerful tool reinforcing motivation as it generates an interaction between the worker and the manager and answers the need to have an affiliation with other members of the company (RN) (Maeda & Kurata, 2012, p. 1). Moreover, it can also answer to the GN of the worker as it can make him feeling...
competent or achieving, above all when the feedback from the manager is positive (Maeda & Kurata, 2012, pp. 1-2). Nevertheless, it depends of the context and has to be especially verified in situation such as the assembly line system, accordingly to the managerial practices of certain factories. This is how we formulate the following hypothesis:

\[ H1.a: \text{The JDT-FS has a positive impact on the satisfaction of the RN.} \]
\[ H1.b: \text{The JDT-FS has a positive impact on the satisfaction of the GN.} \]

Thirdly, the last major technique of the innovative work system is the job enrichment (JDT-JE), which is also an empowerment JD technique (section 3.3.2). It gives to the workers the authority and responsibility to manage their own jobs (Patterson, et al., 2004, p. 642). By this way, workers are encouraged to rely on their initiative and self-control (Chung, 1977, p. 198). Thus, it can be supported that job enrichment answers to the RN as it offers more power to the workers (e.g. power motive) (Patterson, et al., 2004, p. 642). Moreover, it can also be sustained that job enrichment answers to the satisfaction of the GN of the worker as being responsible of his own job can provide him a feeling of achievement (Patterson, et al., 2004, p. 644). However, this kind of practices is not necessarily very common in any kind of working context, especially in an assembly line system. This is how we formulate the following hypothesis:

\[ H2.a: \text{JDT-JE has a positive impact on the satisfaction of the RN.} \]
\[ H2.b: \text{JDT-JE has a positive impact on the satisfaction of the GN.} \]

Nevertheless, job enrichment is more complex and requires more degrees of sophistication as it requires both changes in behavioral systems in an organization and in technical aspects of a job (Docherty, et al., 2009, p. 186).

On the other hand, the management-by-objectives (MBO) is a managerial process by which the superior and his subordinates jointly identify organizational task goals, achieve them, and assess their accomplishments (Antoni, 2005, p. 174). As a management tool, MBO has emerged as a hybrid between traditional administrative theories and human relations movements (Rodgers & Hunter, 1991, pp. 322-323).

First, the administrative theories emphasized the importance of establishing and distributing organizational goals to managers in charge (Rodgers & Hunter, 1991, p. 322). The administration of these goals encourages workers to reach a specific objective and make all efforts necessary to achieve it (Antoni, 2005, p. 174). This goal setting (JDT-GS) corresponds to one of the empowerment JD technique (section 3.2.2) and is susceptible all kinds of motivational needs. Indeed, this goal setting can be associated with financial incentive (EN) (Tobin, 1978, p. 83), or power incentive for instance (RN) (Kelly, 1983, p. 63). Finally, the goal setting technique can also be considered as supporting the GN, as it encourages workers to get over themselves (GN-SA) (Kelly, 1983, p. 64). This is how we formulate the following hypothesis:

\[ H3.a: \text{JDT-GS has a positive impact on the satisfaction of the EN.} \]
\[ H3.b: \text{JDT-GS has a positive impact on the satisfaction of the RN.} \]
\[ H3.c: \text{JDT-GS has a positive impact on the satisfaction of the GN.} \]
Second, the human relations theories emphasized the importance of participative management (JDT-PM) involving employees to organizational goals (Rodgers & Hunter, 1991, p. 322). This JDT-PM is an empowerment JD technique as we could see previously (section 3.2.2). According to Holland, this technique makes workers feeling more responsible and more affiliated to their company (RN) (1995, p. 58). This is how we formulate the following hypothesis:

**H4:** The JDT-PM has a positive impact on the satisfaction of the RN

The MBO program also consists of rewarding workers doing a good job (Yee et al., 2013, p. 458). This practice corresponds to the JD-MCBR which is an empowerment JD technique (section 3.2.2) (Bandura, 1982, p. 133). As well as the JDT-GS, it potentially answers to the satisfaction of the three types of motivational needs. Indeed, as offering especially financial rewards (financial incentive), it answers to the EN (Melancon, et al., 2010, pp. 341-341). It is also able to stimulate the competitive motive (RN-C) as it encourages workers to do better than their colleagues (RN) (Melancon, et al., 2010, pp. 342-346). Finally, the JDT-MCBR can likewise appeal to the GN as it consists of rewarding workers for their competences hardly acquired providing them feeling such as achievement or self-actualizing (Melancon, et al., 2010, p. 343). This is how we formulate the following hypothesis:

**H5.a:** The JDT-MCBR has a positive impact on the satisfaction of the EN.  
**H5.b:** The JDT-MCBR has a positive impact on the satisfaction of the RN.  
**H5.c:** The JDT-MCBR has a positive impact on the satisfaction of the GN.

Thus, as we just developed it above, innovative work system and MBO are two commonly used motivational programs as their efficiency have been demonstrated in several contexts. However, the assembly line system offers a different context and their efficiency still have to be deeper demonstrated. This is why we have formulated these five hypotheses above.
4. PRACTICAL METHOD

In this section we aim to explain how we collected the data, why we chose this practical method and how we got our findings. First, we explain our method to collect the data and our choice of sample. Then, we will describe the construction of our questionnaire.

4.1 Research design

The research design is defined as the plan of investigation for the collection and analysis of data having for final goal to answer to the research question (Bryman & Bell, 2011, p. 40). The objective of this part is to define what has to be studied in the research and in which purpose. Depending on its purpose, it can be exploratory, descriptive or explanatory (Saunders et al., 2009, p. 139). Firstly, an exploratory research has for objective to understand human behaviours in their context developing hypotheses for further research (Saunders et al., 2009, p. 139). However, as we have to answer to hypotheses we formulated after having reviewed theories, we won’t have an exploratory research.

Secondly, a descriptive research aims to provide an accurate profile of a social phenomenon (Saunders et al., 2009, p. 140). In general, this kind of research is correlated with an explanatory objective (descripto-explanatory studies) as a descriptive study by itself may not have a real interest and theoretical implications (Saunders et al., 2009, p. 140). We do not have for only objective to describe the social phenomenon but mainly to analyze its impact of empowerment JD techniques on the satisfaction of assembly line workers’ motivational needs. So it does not seem that this kind of study would be adapted to our purpose.

Thirdly, an explanatory research consists of setting causal relationships between certain variables (Saunders et al., 2009, p. 140). It seems that this kind of research design is the one fitting the best to our goal to understand the impact of empowerment JD techniques on the satisfaction of the blue-collars’ motivation in an assembly line system and its consequences. This will enable us to reveal how beneficial or not it could be to give more responsibilities to these “low qualified” workers and to determine how doable it could be in the reality.

Besides of that, Bryman & Bell divide research design into five sub-categories: experimental, cross-sectional, longitudinal, case study or comparative design (Bryman & Bell, 2011, pp. 45-63). Firstly, the experimental design could be appropriated to our research as we use several study in our literature review using this sub-category. Nevertheless, these kinds of researches are difficult to conduct as they require complex internal validity requirements (Bryman & Bell, 2011, p. 45). Secondly, the cross-sectional design, also called social survey design, usually entails the collection of quite a lot of data at a single point of time providing an immediate picture of a phenomenon (Bryman & Bell, 2011, p. 53). This could be an appropriate design for our study, unfortunately as we collect our data with only two factories, we do not have enough data for that. Thirdly, contrary to the cross-sectional design, the longitudinal design consists of collecting data from the same sample at more than one time, at least (Bryman & Bell, 2011, p. 58). Because of this aspect, this design is probably not adapted to our research as we do not collect our data at different periods of time.
Fourthly, the case study design is quite similar with the cross-sectional design except that it focuses intensively on a specific case (Bryman & Bell, 2011, p. 59). This design is quite appropriate, even if we focus on two factories rather than one, especially as we focus on a single organization (MB), in a same area (Western Europe). Lastly, the comparative design consists of comparing two or more cases (Bryman & Bell, 2011, p. 63). Actually, this method could have been adapted to our study as we collected our data from two factories. However, our intention is not to compare the two factories based on a list of predefined characteristics. On the contrary, we intend to associate our data in order to have a general analysis.

Thus, as we mentioned above, we chose to use a case study for the purpose of our study, in adequation with our scientific method. This research design will enable us to be focus on the analysis of these two factories and to have better expected learnings than with another design. Even if this kind of research tends to be associated with qualitative research it is also adapted to certain quantitative researches such as ours. This research design enables us to get a small view of the effects of the empowerment JD techniques on the blue collars’ motivational needs in two specific MB factories among many MB automotive factories in Germany and France. Our aim is not to generalize but to test the hypothesis using a case study of two factories from the same company.

4.2 Data collection

For a study, researchers have the choice between two types of data: primary and secondary data (Sachdeva, 2009, p. 109). Secondary data are information that has already been collected for other purpose(s) and implies to analyse and to adapt them taking account of their context (Saunders et al., 2009, p. 256). It offers many advantages such as reducing the time to collect the data and therefore offering more time to focus on the analysis (Saunders et al., 2009, p. 268). Moreover, it could also ensure to use better quality data rather than collecting primary data and even offer the possibility to compare it with primary data to go deeper in the analysis (Saunders et al., 2009, pp. 268-269). However, this kind of data also has a negative aspect. Indeed, it has to be adapted to the research needs of information. Indeed, the data may not be relevant toward the research (Sachdeva, 2009, p. 109). Moreover, it could be difficult to measure the accuracy of certain data as their collectors do not necessarily mention their collection methodology (Sachdeva, 2009, p. 109). Finally, secondary data have to be updated and quite recent before to be used, which can sometimes be quite an issue as certain phenomenon change all the time (Sachdeva, 2009, p. 109). Because of all these inconvenient to use secondary data, we chose to collect our own primary data as we wanted to focus on one specific company, about which it would have been very complicated to find significant secondary data sufficiently recent. Thus, primary data appeared as being the best option for us in order to confront the theory and our hypotheses to the reality.

Relative to the context of our study, we carefully integrated some information about the contexts of this study. After having administered our questionnaires to the respondents, we were allowed to visit both factories (ELC Étoile du Rhône and Rastatt) to have a better understanding of the issues and specificities relative to the characteristics of each one. We prepared some open questions and ask to the managers about: the work conditions of the blue-collars, their motivations, the story of the car manufacturer and the factory, their current situation and their JD practices. Thus, we noticed that these
factories are quite different from each other’s. ELC Étoile du Rhône is a sample part factory rather Rastatt is an engine factory. They are also very different about sizes as ELC Étoile du Rhône has around 500 employees rather Rastatt has about 6,000 employees. They were also able to notice different managerial practices, but were not allowed to provide more details about this point. This makes our case study quite diverse but also underlines the importance to consider the difference of context in between these two factories.

4.2.1 Sampling method

Applying our research to the motivation of all assembly line workers in all the European automotive factories which would have been unfeasible in our case because of time and resources. Thus we decided to use samples to collect our data from two specific companies from which we considered as quite developed in terms of managerial practices and workers’ motivation in European automotive factories. Indeed, as mentioned previously (section 3.1.2), MB is quite well known as being especially attentive toward the satisfaction and the well-being of its workers (Bodnar, 1989, pp. 1210-1211).

Sampling consists of selecting units from a population of interest in order to collect data which can be fairly generalized to the whole population targeted (Sachdeva, 2009, p. 141). Thus, the sampling method seems to be a critical aspect conditioning the validity of the study and requires quite some attention. As we collected our data from only two factories, we chose a case study as research design which makes us able to preserve the validity of our study as we focus on two specific contexts and do not generalize our study to all the European automotive factories, which would have been a mistake.

Besides, we did not choose our sample by probability, i.e. that we did not select our sample by random, but we did it by convenience. Actually we selected our sample factories according to the factory from which we obtained an authorization to visit their site and to administer our questionnaire to their employees (Bryman & Bell, 2011, pp. 176-190). To justify the fact that we did it by convenience, we looked at different automotive factories in Europe. Then, we contacted several factories prioritizing Scandinavian countries, France and Germany in order to increase the probability to reach at least one factory. We tried to search contacts to get the factories from our personal network and their respective websites. Finally, we realized that it was very tough to get access authorization to the blue-collars especially because of the legislation. In fact, it takes several weeks, even months, between the time we contacted the organizations and the time to obtain answers approving or not our visit of their site. Managerial committee actually needed to negotiate with several internal commissions and be in agreement with the labour unions. We finally got authorizations to visit only two factories among the organizations we contacted.

Finally, in ELC Étoile du Rhône we reach 21 respondents out of 140 employees while in the Rastatt plant we got 46 respondents out 6,344 employees. As mentioned previously, all our respondents of the two factories were volunteers to be part of our study. Before our visit they were informed of our visit by their managers in all teams composing the workforce of each factory. Indeed, each factory were divided in different teams specialized on specific tasks. Reaching all of these sections made us able to be in touch with almost all kinds of blue collars in each factory. By this way, our volunteer
respondents were all blue collars from very diverse part of the factories. By this way we can pretend that our sampling is quite diverse in both factories.

4.2.2 Questionnaire design

Questionnaire choice of design

It is possible to distinguish two categories of survey: the questionnaire and the interview (Sachdeva, 2009, p. 112). We chose to use the questionnaire concept as it allows questioning more respondents and is more adapted to a quantitative research, which is more time and money saving for our research (Sachdeva, 2009, p. 112). Besides of that, additional factors had to be considered to design our questionnaire: bias issues and administrative issues (Sachdeva, 2009, p. 114).

On the one hand, bias issues refer to: social desirability, prompting and probing effects, false respondents and questionnaire not answered in the correct order (Bryman & Bell, 2011, p. 233). All these biases can generate answers distortions. A self-completion questionnaire helps to avoid certain of these phenomena as respondents are not influenced by the presence of the interviewer (Bryman & Bell, 2011, p. 237). Indeed, the social desirability refers to people's reaction to make good impression toward the others (Bryman & Bell, 2011, p. 233). Without interviewer to influence them, respondents are less tempted to modify their answers to look better (Bryman & Bell, 2011, p. 233). This is an aspect we considered for the administration of our questionnaire to our respondents. About the probing and prompting effects, they are caused by the direct intervention of the interviewer with intention to help respondents to understand the questions (Bryman & Bell, 2011, p. 233). Even if it comes from a good intention, the intervention of the interviewer can directly influence the respondents in their answers and lead to inaccurate data. However, it also avoids misunderstanding that only a face-to-face or a phone questionnaire can provide (Bryman & Bell, 2011, p. 233). Moreover, the presence of the interviewer allows him to verify if the respondents correspond to the requirement of the study and that they follow correctly the process of the questionnaire.

On the other hand, administrative issues refer to the cost, facilities, time and personnel researchers can use to conduct their survey (Sachdeva, 2009, p. 115). Again, a self-completion questionnaire is cheaper, quicker and does not any facilities or personnel, compared to a live questionnaire. In addition to that, from the respondent perspective, self-completion questionnaire also offers more freedom and time to answer the survey. We attempted not to influence them in their choice of response. Considering all these arguments, we designed our questionnaire as simply as possible to a way to minimize our intervention toward the respondents asking for more precisions. Indeed, we defined the different concepts to facilitate the comprehension to the respondents.

Besides, in order to avoid misunderstanding bias we sent our questionnaire to some managers of our sample factories asking them for some feedback with the objective to make our questions as understandable as possible for their employees. We even got a very complete and precious feedback from the MB France director. Thanks to these “advisers” we improved quite a lot the design of our questionnaire. For instance, we had to adapt some of our terms, either to make it clearer for the respondents or to respect the conditions asked by managers (no reference to the managers, not too precise about
certain aspects of the research). Another example is a theoretical term such as “modelling contingent/ competence based reward” that we translated to “good job reward” to make it more understandable. We also chose to use mandatory closed questions in order to guarantee the full completion of the questionnaires and because they are easier and quicker to understand (Saunders et al., 2009, p. 375).

**Questionnaire format**

We also thought about administering our questionnaire with an online format that would have forced our respondents to answer the questions in a pre-defined order. However, we considered the fact these workers are not so used with this kind of tool and it seemed more appropriate to administer the questionnaire through a paper format. Actually, we could even not send it to them by email as the factory was not legally allowed to transfer our questionnaire to them by this way. Thus, we chose to administer our questionnaire on a paper format, but we gave instructions to the respondents to complete the questionnaire in the correct order without looking at the whole questionnaire before, and we do not have any reason to believe that they did not respect our instructions. Moreover, the totality of our respondents were 100% voluntary and were very cooperative to follow our instructions. These volunteers were fixed before our visit of each factory as their managers informed them that we were coming to realize a study and a list was done of each workers interested to be part of the survey. Then, according to the time we could spend in each factory and the number of volunteers, a schedule was set with a certain number of workers coming at different moment to a specific conference room in order to complete the questionnaire. By this way, with the participation of the local managers, we set an efficient system allowing workers to come to answer to our questionnaire in a very short time without penalising their work.

Our survey is composed of fifteen questions divided in two main sections. It is composed of two types of scales: nominal and 6-points Likert scales (see appendices 1 and 2). The first section of the questionnaire deals with general demographics questions on the gender and their age. The second section of the questionnaire basically deals with our hypotheses. In this section we asked the opinion of the respondents about how they evaluate their level of motivation and to what extent the empowerment JD techniques of their managers contribute to the satisfaction of their motivational needs. Starting by the question 5, each question examines the perception of each respondent to which extent they think each empowerment JD technique impact on the satisfaction of their motivational needs (see section 3.5.1).

**Questionnaire translation**

As our questionnaire was both partition to French and German speakers, we translated it in French, as it is our native language, but we did not translate it in German as none of us speak German. However, we asked to the communication service from our German sample factory to translate it in order to make it easier to understand for their employees. Nevertheless, this was not a real “academic” translation and we actually kept the English version with some German notes, made by the local managers and communication services, to help the German respondents to understand our questionnaire. This is the reason why there is no German version of our questionnaire in the appendices. About the French version, some translations from English to French
were sometimes difficult to find. In order to avoid miss-translation, we took into account the following points: the lexical meaning, the idiomatic meaning, the experimental meaning, the grammar and the syntax (Saunders et al., 2009, pp. 383-385). According to the same authors, it exists four possible ways to translate a survey. Firstly, the “direct translation” which is the simplest and quickest method, but also the one which can the most easily lead to discordances (Saunders et al., 2009, p. 385). Secondly, the “back-translation” which consists of translating one back to the original and allows better assessment of the problems but it requires both French and English native speakers, which is not our case (Saunders et al., 2009, p. 385). Thirdly, the “parallel translation” consists of making two translations of the same survey, then comparing it and compiling them to make the best and unique translation of the questionnaire (Saunders et al., 2009, p. 385). Lastly, the “mixed techniques” is a mix of the back-translation and the parallel translation (Saunders et al., 2009, p. 385). This is the way to make a translation and it is probably the technique the most approaching the way we did our translation as we used notes from several feedbacks we got of certain managers. We did not have English native speakers with us, but we believe that our translation was good enough, especially as the most important version of our questionnaire was the French version which we did pretty well as native speakers, and because our German version was adapted by local managers who were native German speakers. Thus, we believe that we produced good translations of our survey respecting all the meanings.

**Questionnaire terms’ codes and language adaptation**

In order to make as much as possible understandable the main terms of our study to everyone, we constructed this table 5. This combines the tables 2 and 4 which are the tables referred to the way we coded the empowerment JD techniques and the motivational needs.

- The column “Terms” indicates the theoretical terms of our study relative to our hypothesis (see sections 3.2.2, 3.3.2 and 3.5).

- The column “Codes” indicates the codes associated to the terms. We will mainly use these terms to analyse and discuss from the findings we obtained, in order to facilitate the comprehension of the reader. These are used to make better and more efficient connections from the theory to the analysis section.

- The column “Language Adaptations” is attached to the terms we used in the questionnaire in order to make the theoretical terms more understandable for the blue collars. We simplified the terms. That was for case for example “modelling contingent/competence based reward” which was translated to “Good job reward”. This last column is directly referred to the English questionnaire we built (see appendix 1). These are used to make better and more efficient connections from the theory to the construction of the questionnaire.
<table>
<thead>
<tr>
<th>Terms (theory)</th>
<th>Codes</th>
<th>Language Adaptations (questionnaire)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participative management</td>
<td>JDT-PM</td>
<td>Participative management</td>
</tr>
<tr>
<td>Goal setting</td>
<td>JDT-GS</td>
<td>Goal setting</td>
</tr>
<tr>
<td>Feedback system</td>
<td>JDT-FS</td>
<td>Feedback</td>
</tr>
<tr>
<td>Modelling contingent/competence based reward</td>
<td>JDT-MCBR</td>
<td>Good job reward</td>
</tr>
<tr>
<td>Job enrichment</td>
<td>JDT-JE</td>
<td>Job enrichment</td>
</tr>
<tr>
<td>Security need</td>
<td>EN-S</td>
<td>Financial needs</td>
</tr>
<tr>
<td>Affiliative motive</td>
<td>RN-A</td>
<td>Sense of belongings to a company need</td>
</tr>
<tr>
<td>Power motive</td>
<td>RN-P</td>
<td>Autonomy feeling need</td>
</tr>
<tr>
<td>Competitive motive</td>
<td>RN-C</td>
<td>Need to feel more competitive toward its colleagues</td>
</tr>
<tr>
<td>Competence need</td>
<td>GN-C</td>
<td>Need to develop new skills</td>
</tr>
<tr>
<td>Achieving need</td>
<td>GN-A</td>
<td>Challenges spirit need</td>
</tr>
<tr>
<td>Self-actualizing need</td>
<td>GN-SA</td>
<td>Need to reach its potential</td>
</tr>
</tbody>
</table>

Table 5: Terms’ codes and language adaptations

4.3 Data analysis strategy

As it was taught to us in previous courses, we used SPSS to analyze our data as it is a software commonly used for quantitative studies (Bryman & Bell, 2011, p. 360). After having transferred our data from the French and German factories from our paper format questionnaires, we imported them into SPSS. We had to use SPSS as it enables us to examine many types of relationships between variables through correlations, regressions, descriptive statistics etc... (Bryman & Bell, 2011, pp. 371-381).

Bryman & Bell state that researchers have to be aware of the kind of analysis that will be possible to make with the data at an early stage of the study (2011, pp. 334-335). Consequently, in this section we will introduce the tools we will use to collect and analyze the data. First, we will explain how we will assess the internal reliability of our questions to ensure the exploitability of our collected data (Bryman & Bell, 2011, p. 162). Second, we will use univariate and bivariate analysis to validate, change or reject our hypothetical relations from our conceptual model.

Regarding the structure of our analysis, we gathered data from France and Germany. There are four types of variables: interval, ordinal, nominal and dichotomous (Bryman & Bell, 2011, p. 341). We mainly used interval variable measured with 6-points Likert-scales, but also one dichotomous (question 1 of the questionnaire) and one ordinal (question 2 of the questionnaire). The aim is to use these variables; we will have to translate these variables to numerical and statistical data.

The connection from SPSS to the analysis is made in the following ways:
1 - We indicated in our English questionnaire (see appendix 1) by numbers in green (Q1, Q2, Q3...), the way we referred the questions in SPSS software. For example, “Q5” in green (see appendix 1) from SPSS corresponds to the participative management Likert-scale in the question 4 “How do you evaluate the importance of these practices on your motivation?”
2 – We referred to the green “Q1, Q2, Q3 etc...” to explain the results from the regression tables we retrieved (see appendix 1). The dependent variables correspond to the motivational needs whereas the independent variables are matched with the empowerment JD techniques.

3 - All the regression tables in the analysis section utilized the codes we previously summarized in the table 5 to refer to the empowerment JD techniques and the motivational needs.

4 - All the language we used to explain our results will be the terms from the theory and not from the questionnaire.

4.3.1 Cronbach’s Alpha

We set our questions referencing to different previous studies in order to make it coherent and internally reliable. Moreover, we strove to select sets which had been used in other studies. The consistence of these sets is essential as the robustness of our questionnaire will depend of it (Saunders et al., 2009, p. 373). In fact, to evaluate our variables, we will use sets of questions which need to be consistent between each other and make us able to measure individual variables. To measure it we will use the Cronbach’s alpha which is the most commonly used tool for that purpose in SPSS (Saunders et al., 2009, p. 374). According to Bryman & Bell, (2011, p. 157) we will undertake that an alpha of 0.7 considering enough and will prove the reliability of our questionnaire. Thus, if certain of our sets have an inferior coefficient, we will have to try to delete some questions until the internal reliability is validated. So, if we do not obtain the reliability through a coefficient above 0.7 we will have to reduce the number of variables and test other combinations.

4.3.2 Univariate Analysis

At the beginning of our analysis (see section 5: empirical findings), we will analyse each variable individually through frequency tables, central tendency and dispersion. First, the frequency table consists of showing the sample through variable categories (Bryman & Bell, 2011, p. 342). This analysis will be adapted for the gender and the age of our respondents, as it will provide us a first view of our sample. Second, we will measure the mean for our interval variables as a central tendency tools. The mean refers to the values of a distribution divided by the number of values (Bryman & Bell, 2011, p. 334). We will principally use it to compare the results for each construct relative to how the empowerment JD techniques impact on the satisfaction of the motivational needs. Last, to represent the dispersion of our sample on each variable, we will use the standard deviation which measures the extent of differentiation from the mean (Saunders et al., 2009, p. 447). By this way, we will be in a position to assess if our means are significant or not.

4.3.3 Bivariate Analysis

The main purpose of this paper is to study how related our variables are. As it exists several techniques to make this kind of analysis, we will determine which are adapted to our case according to the kind of variables we use. As we mainly have interval variables, we will use the Pearson's r (coefficient of correlation) to analyse the relations between them (Bryman & Bell, 2011, p. 347). It is a coefficient having a value between -1 and 1, and the closer it is to [1] (absolute value of 1) the stronger is the relationship. The fact that it is negative or positive (- or +) indicates the direction of the relationship.
(Bryman & Bell, 2011, p. 342). However, this coefficient only sets if there is a relationship between two variables and it does not provide a cause-effect relationship. In order to obtain this kind of information, we will use multiple regressions as we saw in all our models that one dependent variable generally depends of several independents variables. In addition to these aspects, we will also use bivariate analysis for all of the regressions we will retrieve in the analysis section.

4.4 Ethical considerations

When researchers conduct a study, they have to respect certain ethical principles. In fact, these principles consist of promoting the aims of the research and ensuring the responsibility of the researchers toward the public. However, they vary dependently to people interiority, so it is difficult to set a universal stance of research ethic. Nevertheless, four types of ethical principles toward respondents have been highlighted as unavoidable conducting a study in order to prevent harms to the public, such as the Dalton’s study (1959) or the Milgram experiment (1963) (Bryman & Bell, 2011, p. 128). These four ethical principles are: no harm, no lack of information, no invasion of privacy, and no deception (Bryman & Bell, 2011, p. 128).

Firstly, participants have to be preserved of any harm (physical or psychological) (Bryman & Bell, 2011, pp. 128, 129). For our research, respondents were no how forced to take part in our study, and their physical and psychological healths were never affected by our intervention. It was purely based on the volunteering.

Secondly, participants have to be fully informed when they consent to be part of a study (Bryman & Bell, 2011, p. 132). Even if it is difficult to assert that our participants have been informed about all possible information related to our research, we can state that we put quite some attention on providing as much information as we could. Indeed, each of our administered questionnaire was included a short summary of the purpose of our study and the context in which it was led. However, we could not also provide too many details about certain aspects as we had instructions from the managers as motivation is a quite sensitive topic in this kind of working context.

Thirdly, participants’ privacy has to be respected (Bryman & Bell, 2011, p. 136). As our study directly concerns respondents working conditions, we had to formulate a confidentiality agreement to be signed by each blue-collar. This aimed to preserve their privacy and to inform them that our study was entirely anonymous and independent from their company. Furthermore, in order to respect their privacy, we precised in the short summary included in the questionnaire that this study is done independently from the interests of the company enabling us not to be considered as people integrated in the organization’s management as it would affect their answers.

Lastly, participants should not be disappointed (Bryman & Bell, 2011, pp. 136, 137). By disappointment/deception the authors refer to when researchers present something different from what their study is in reality. As we mentioned previously, we particularly paid attention on providing as much information as we could to our respondents and we did not got any feedback stating that our respondents were surprised or disappointed about the content of our questionnaire. Thus, we can assume that our survey was conducted respecting as much as we could the four ethical principles of research.
5. EMPIRICAL FINDINGS

*This chapter is aiming to provide information about our sample, the internal reliability of the constructs we used and the results of the descriptive statistics we generated.*

5.1 Cronbach’s Alpha

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Cronbach’s Alpha</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of motivation</td>
<td>0.726</td>
<td>5</td>
</tr>
<tr>
<td>Managerial practices toward the motivation</td>
<td>0.828</td>
<td>6</td>
</tr>
<tr>
<td>Feedback toward the relation-oriented and growth-oriented needs</td>
<td>0.902</td>
<td>3</td>
</tr>
<tr>
<td>Participative management toward relation-oriented needs</td>
<td>0.715</td>
<td>7</td>
</tr>
<tr>
<td>Goal setting has a positive toward existence needs, relation-oriented needs and growth-oriented needs</td>
<td>0.865</td>
<td>7</td>
</tr>
<tr>
<td>Modelling contingent competence based rewards toward existence needs, relation-oriented needs and growth-oriented needs</td>
<td>0.827</td>
<td>6</td>
</tr>
</tbody>
</table>

*Table 6: Cronbach’s Alpha*

As explained in the section 4.3, Cronbach’s Alpha is one of the statistical methods, which measures the internal consistency and reliability of our constructs for France and Germany (Saunders et al., 2012, p. 430). The value of Cronbach’s Alpha coefficient oscillates between 0 and 1 (Saunders et al., 2012, p. 430). Values higher than 0.7 are sufficient for the reliability of our results (Saunders et al., 2012, p. 430). To measure it, we have collected some items into constructs to facilitate the global view of our data. The Cronbach’s Alpha table revealed that all the constructs we have used were reliable because we can notice than all the Cronbach’s Alpha values are higher than 0.7. Based on the results of Cronbach’s alpha, we can conclude that our constructs are reliable to use for regression analyses (Bryman & Bell, 2007, p. 164).

The Cronbach’s Alpha table revealed that all the constructs for France and Germany we used were reliable because we noticed that all the Cronbach’s Alpha values are higher than 0.7. Based on the results of Cronbach’s alpha in the table 6, we can conclude that all of our constructs are reliable to use for regression analyses (Bryman & Bell, 2007, p. 164).

5.2 Demographics

In this section, we are aiming to provide more explanation on demographic data of the respondents. We used univariate analysis to analyse the gender and the age of our respondents. We think essential to get some characteristics of our respondents as it could have an influence on their level of motivation on our constructs. We asked two questions about their gender and their age.
First, the first question we asked in the questionnaire was about gender. Regarding the results showed in the graph 1, we can say that most of the respondents are men (95.5%) compared to women who represent a minority (4.5%) for France and Germany. As in our results, the only 3 women were present all in the German factory.

Second, the second question we asked in the questionnaire was about the age. Regarding showed in the graph 2, the distribution of the age of the respondents in the two factories, we can see that two highest intervals of age the most represented are first the interval between 21 and 30 years old (40.3%) and second the interval from 31 and 40 years old (28.4%). The third interval the most represented is the interval from 51 to 60 years old (22.4%). And the last one is the one between 41 and 50 years old (9.00%). We notice also that no respondents were less or equal of twenty years old.
5.3 Descriptive Statistics

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Mean (General)</th>
<th>Std Deviation (General)</th>
<th>Mean (France)</th>
<th>Std deviation (France)</th>
<th>Mean (Germany)</th>
<th>Std deviation (Germany)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of motivation</td>
<td>3.84</td>
<td>1.039</td>
<td>4.38</td>
<td>0.973</td>
<td>3.6</td>
<td>1.258</td>
</tr>
<tr>
<td>Managerial practices toward the motivation</td>
<td>3.51</td>
<td>0.926</td>
<td>3.6</td>
<td>0.927</td>
<td>3.476</td>
<td>1.017</td>
</tr>
<tr>
<td>Feedback toward the relation-oriented and growth-oriented needs</td>
<td>3.31</td>
<td>0.678</td>
<td>3.253</td>
<td>0.659</td>
<td>3.457</td>
<td>0.736</td>
</tr>
<tr>
<td>Participative management toward relation-oriented needs</td>
<td>3.33</td>
<td>1.169</td>
<td>3.27</td>
<td>1.229</td>
<td>3.457</td>
<td>0.739</td>
</tr>
<tr>
<td>Goal setting has a positive toward existence needs, relation-oriented needs and growth-oriented needs</td>
<td>3.45</td>
<td>0.836</td>
<td>3.36</td>
<td>0.832</td>
<td>3.331</td>
<td>0.890</td>
</tr>
<tr>
<td>Modelling contingent/competence based rewards toward existence needs, relation-oriented needs and growth-oriented needs</td>
<td>3.57</td>
<td>0.968</td>
<td>3.8</td>
<td>1.18</td>
<td>3.384</td>
<td>0.563</td>
</tr>
<tr>
<td>Job enrichment toward relation-oriented and growth-oriented needs</td>
<td>3.28</td>
<td>0.752</td>
<td>3.25</td>
<td>0.645</td>
<td>3.44</td>
<td>0.806</td>
</tr>
</tbody>
</table>

*Table 7: Descriptive statistics*

After measuring the reliability of our constructs with Cronbach’s Alpha, we retrieved descriptive statistics for all the constructs to get an overview of the results of the data collection.

To go deeper in the analysis, in table 7, in the general data, we can see that all the means are between 3 and 4. In addition to this observation, we can notice the highest mean is the question about the “level of motivation” (3.84) while the lowest is the construct about “job enrichment (JDT – JE)” (3.28). These means have some limitations because it does not provide details about the dispersion of our constructs around the mean. We are able to see the dispersion thanks to the standard deviation. Standard deviations inform us about the dispersion of each answer around the mean (Saunders et al. p. 447). In fact, we can see that the values range of our standard deviations columns in general, indicate a variation between 0.678 and 1.169 which are both considered as low considering that our scales are 6-point scales. Finally, it means that all of the constructs were closely dispersed around the mean.
The results of Pearson for all of our constructs are shown in the table 8. It is evoked because of the Pearson correlation assesses the strength and the direction of the relationships between the different constructs. The rule of thumb proposed by Hair et al. (2003, p. 569) submits a construct to assess this as shown in the table 9. Linked to our constructs, we can notice that all of our constructs are positive except two constructs (job enrichment (JDT-JE) on motivational needs (6) and good job reward (JDT - MCBR) on motivational needs (5)). These negative constructs and correlations mean the negative correlation. Nonetheless, the positive correlations show a values range between 0.063 and 0.628 which means that these constructs are none to strongly related to their respective construct. The strongest correlations are between the constructs (3) and (1) which indicated a Pearson correlation of 0.628, then between the constructs (4) and (3) which indicates a Pearson correlation of 0.589.

**Table 8: Pearson correlation**

<table>
<thead>
<tr>
<th>Constructs</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empowerment JD Techniques on motivational needs</td>
<td>1</td>
<td>.487</td>
<td>.628</td>
<td>.550</td>
<td>-.034</td>
<td>-1.99</td>
</tr>
<tr>
<td>Feedback on motivational needs</td>
<td>.487</td>
<td>1</td>
<td>.394</td>
<td>.588</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Participative Management on motivational needs</td>
<td>.628</td>
<td>.394</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Goal setting on motivational needs</td>
<td>.550</td>
<td>.588</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Good job reward on motivational needs</td>
<td>-.034</td>
<td>.508</td>
<td>-.101</td>
<td>.327</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Job enrichment on motivational needs</td>
<td>-1.99</td>
<td>.309</td>
<td>-.225</td>
<td>.063</td>
<td>.356</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 9: Strength of correlation. Hair et al. (2003, p. 569)**

<table>
<thead>
<tr>
<th>Range of coefficient</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.81 - 1.00</td>
<td>Very strong</td>
</tr>
<tr>
<td>0.61 - 0.80</td>
<td>Strong</td>
</tr>
<tr>
<td>0.41 - 0.60</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.21 - 0.40</td>
<td>Weak</td>
</tr>
<tr>
<td>0.00 - 0.20</td>
<td>None</td>
</tr>
</tbody>
</table>
6. ANALYSIS

In this section we will use several statistical tools to present the results of our survey. We will expose five bivariate regressions for the impact of the five empowerment JD techniques on the satisfaction of the motivational needs according to the data we have been able to collect in two factories in Germany and France. In each regression, we will present the results from our two industrial sites in together. This presentation of our results will allow us to develop discussions and conclusions further in this report.

6.1 Regression 1: the JDT-FS on the satisfaction of RN and GN (H1)

This first bivariate regression analysis (table 10) will enable us to evaluate the causal relationship between the JDT-FS (independent variable) with the RN (sense of belonging, autonomy feeling, competitiveness needs) and the GN (skill development, challenge spirit, and expression of its potential needs) in our two sites of data collection. As this regression refers to H1, we divide our analysis for H1.a and H1.b.

![Table 10: Regression 1](image)

H1.a: The JDT-FS has a positive impact on the satisfaction of the RN.

According to the probability of occurring by chance, all the relationships of the JDT-FS with the RN are significant (p < 0.05) (Saunders et al., 2009, p. 461). Between these variables, the one having the strongest relationship with the JDT-FS is the RN-C (competitiveness need) with a Beta of 0.514. The weakest relationship is with the RN-A (sense of belonging need). All of the relationships are positive, allowing us to say that
the JDT-FS has a positive impact on the satisfaction of all the RN. About the collinearity, we do not have any issue. Indeed, the tolerance of each variable is above 0.1, and their VIF is below 5.

**H1.b: The JDT-FS has a positive impact on the satisfaction of the GN.**

Concerning the relationships of the JDT-FS with the GN, they are also all significant according to the probability to occur by chance (p < 0.05) except the GN-SA (need to express the potential) (Saunders et al., 2009, p. 461). Between these variables, the one having the strongest relationship with the JDT-FS is the GN-C (need to develop new skills) with a Beta of 0.474. The weakest relationship is with the GN-A (challenge spirit need). All of the relationships are positive, allowing us to say that the JDT-FS has a positive impact on the satisfaction of the GN (except the need to express its potential). About the collinearity, we do not have any issue. Indeed, the tolerance of each variable is above 0.1, and their VIF is below 5.

### 6.2 Regression 2: the JDT-PM on the satisfaction of RN (H4)

The aim of this bivariate regression is to examine the relationship between the satisfactions of the RN (sense of belonging, autonomy feeling and competitiveness needs) and the JDT-PM (independent variable in our two sites of data collection (table 11). Thus, this regression refers to H4.

**Table 11: Regression 2**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>a.</td>
<td>(Constant)</td>
<td>1.259</td>
<td>.089</td>
<td>4.336</td>
<td>.000</td>
</tr>
<tr>
<td>a.</td>
<td>Q5 Impact of participative management on motivation</td>
<td>.096</td>
<td>.089</td>
<td>.639</td>
<td>6.691</td>
</tr>
<tr>
<td>b.</td>
<td>(Constant)</td>
<td>1.256</td>
<td>.115</td>
<td>4.838</td>
<td>.000</td>
</tr>
<tr>
<td>b.</td>
<td>Q5 Impact of participative management on motivation</td>
<td>.466</td>
<td>.091</td>
<td>.536</td>
<td>5.123</td>
</tr>
<tr>
<td>c.</td>
<td>(Constant)</td>
<td>1.404</td>
<td>.114</td>
<td>4.475</td>
<td>.000</td>
</tr>
<tr>
<td>c.</td>
<td>Q5 Impact of participative management on motivation</td>
<td>.466</td>
<td>.090</td>
<td>.554</td>
<td>5.370</td>
</tr>
</tbody>
</table>

*a. Dependent Variable: Q15 Impact of participative management on sense of belonging (relation-oriented needs)
b. Dependent Variable: Q16 Impact of participative management on autonomy feeling (relation-oriented needs)
c. Dependent Variable: Q17 Impact of participative management on competitiveness spirit (relation-oriented needs)

**H4: The JDT-PM has a positive impact on the satisfaction of the RN**

According to the probability of occurring by chance, all the relationships of the JDT-PM with the RN are significant (p < 0.05) (Saunders et al., 2009, p. 461). Between these variables, the one having the strongest relationship with the JDT-PM is the RN-A (sense of belonging need) with a Beta of 0.639. The weakest relationship is with the RN-P (autonomy need). All of the relationships are positive, allowing us to say that the JDT-PM has a positive impact on the satisfaction of all the RN. About the collinearity, we do not have any issue. Indeed, the tolerance of each variable is above 0.1, and their VIF is below 5.
6.3 Regression 3: JDT-GS on the satisfaction of EN, RN and GN (H3)

Here we use another bivariate regression analysis, in order to examine the causal relationship between the satisfaction of the EN (financial needs), the RN (sense of belonging, autonomy feeling, competitiveness needs) and the GN (skill development, challenge spirit, and expression of the potential needs), and the JDT-GS (independent variable) in our two sites of data collection (table 12). As this regression refers to H3, we divide our analysis for H3.a, H3.b and H3.c.

![Table 12: Regression 3](image)

**H3.a: JDT-GS has a positive impact on the satisfaction of the EN.**

According to the probability of occurring by chance, the relationships of the JDT-GS with the EN (or EN-S) is significant (p < 0.05) (Saunders et al., 2009, p. 461). Its Beta is of 0.330 which is positive, allowing us to say that the JDT-GS has a positive impact on the satisfaction of all the EN. About the collinearity, we do not have any issue. Indeed, its tolerance is above 0.1, and its VIF is below 5.

**H3.b: JDT-GS has a positive impact on the satisfaction of the RN.**

About the relationships of the JDT-GS with the RN, they are significant according to the probability to occur by chance (p < 0.05) (Saunders et al., 2009, p. 461). Between these variables, the one having the strongest relationship with the JDT-GS is the RN-A (sense of belonging need) with a Beta of 0.478. The weakest relationship is with the RN-P (autonomy need). All of the relationships are positive, allowing us to say that the JDT-GS has a positive impact on the satisfaction of all the RN. About the collinearity,
we do not have any issue. Indeed, the tolerance of each variable is above 0.1, and their VIF is below 5.

H3.c: JDT-GS has a positive impact on the satisfaction of the GN.

Concerning the relationships of the JDT-GS with the GN, it is only significant with the GN-C (need to develop new skills) \((p < 0.05)\) (Saunders et al., 2009, p. 461). Its Beta is of 0.285 which is positive, allowing us to say that the JDT-GS has a positive impact on the satisfaction of the GN (at least only on the need to develop new skills). About the collinearity, we do not have any issue. Indeed, the tolerance is above 0.1, and its VIF is below 5.

6.4 Regression 4: the JDT-MCBR on the satisfaction of EN, RN and GN (H5)

In order to measure the impact of the JDT-MCBR (or good job reward) (independent variable) on the satisfaction of the EN (financial needs), the RN (sense of belonging, autonomy feeling, competitiveness needs) and the GN (skill development, challenge spirit, and expression of the potential needs) we conduct a bivariate regression analysis in our two sites of data collection (table 13). Thus, this regression refers to H5.a, H5.b and H5.c.

![Table 13: Regression 4](image)
For all H5.a, H5.b and H5.c, none of the relationships of the JDT-MCBR with the motivational needs are significant (p > 0.05) (Saunders et al., 2009, p. 461). Thus, the regressions between the satisfaction of the motivational needs and the JDT-MCBR are not verified according to the data collected in our two sites.

6.5 Regression 5: JDT-JE on the satisfaction of RN and GN (H2)

In order to evaluate the causal relationship between the RN (sense of belonging, autonomy feeling, competitiveness needs) and the GN (skill development, challenge spirit, and expression of the potential needs) with JDT-JE (independent variable) we use a bivariate regression analysis in our two sites of data collection (table 14). As this regression refers to H2, we divide our analysis for H2.a and H2.b.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std Error</td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td>3.103</td>
<td>.031</td>
<td>.044</td>
<td>10.809</td>
<td>.000</td>
</tr>
<tr>
<td>b.</td>
<td>2.905</td>
<td>.262</td>
<td>.377</td>
<td>11.213</td>
<td>.000</td>
</tr>
<tr>
<td>c.</td>
<td>3.879</td>
<td>.172</td>
<td>-1.217</td>
<td>1.951</td>
<td>.054</td>
</tr>
<tr>
<td>d.</td>
<td>3.135</td>
<td>.024</td>
<td>.040</td>
<td>9.685</td>
<td>.000</td>
</tr>
<tr>
<td>e.</td>
<td>2.808</td>
<td>.239</td>
<td>.249</td>
<td>7.012</td>
<td>.000</td>
</tr>
<tr>
<td>f.</td>
<td>3.544</td>
<td>.136</td>
<td>-1.199</td>
<td>1.987</td>
<td>.044</td>
</tr>
</tbody>
</table>

Table 14: Regression 5

H2.a: JDT-JE has a positive impact on the satisfaction of the RN.

According to the probability of occurring by chance, the relationships of the RN with the JDT-JE, it is only significant with the RN-P (autonomy need) (p < 0.05) (Saunders et al., 2009, p. 461). Its Beta is of 0.377 which is positive, allowing us to say that the JDT-GS has a positive impact on the satisfaction of the RN (at least only on the autonomy need). About the collinearity, we do not have any issue. Indeed, its tolerance is above 0.1, and its VIF is below 5.
H2.b: JDT-JE has a positive impact on the satisfaction of the GN.

Concerning the relationships of the JDT-JE with the GN, it is only significant with the GN-A (challenge spirit need) ($p < 0.05$) (Saunders et al., 2009, p. 461). Its Beta is of 0.249 which is positive, allowing us to say that the JDT-GS has a positive impact on the satisfaction of the GN (at least only on the challenge spirit need). About the collinearity, we do not have any issue. Indeed, its tolerance is above 0.1, and its VIF is below 5.
7. DISCUSSION

This chapter is dedicated to the examination of our findings. In this perspective we will discuss all our hypotheses based on our theoretical framework. Then, from the findings of our discussion we will revise and evaluate our conceptual model. These discussions and revision will provide a basis for our conclusion and will help us to suggest future researches.

7.1 Regressions 1, 2 and 3

Thanks to the three first regressions, the hypotheses H1, H4 and H3 are the most strongly supported. In order to examine it, we will follow the theoretical review (section 3) which is at the base of these same hypotheses in comparison with the findings (section 6).

**H1.a: The JDT-FS has a positive impact on the satisfaction of the RN**
– Strongly supported –

**H1.b: The JDT-FS has a positive impact on the satisfaction of the GN**
– Strongly supported –

In this hypothesis, there were two sub-hypotheses to verify making the distinction between the RN and the GN. For both the satisfaction of the RN and the GN, the positive impact from the JDT-FS is significant and positive as we could see in the analysis (section 6.1), except for the need to express the potential. Indeed, we saw that the probability to occur by chance is lower than 0.05 and the collinearity is verified (Saunders et al., 2009, p. 461) for the relationships with all the following dependent variables, respectively in order of importance: the competitiveness (RN-C), the skill development (GN-C), the challenge spirit (GN-A), the autonomy feeling (RN-P) and the sense of belonging (RN-A). These findings go in the same direction than our literature review as it confirms that the JDT-FS has a positive impact on the satisfaction of both RN and GN (section 3.5) (Chung, 1977, p. 192). Both impact are quite similar as the cumulated impacts on the RN are only 0.216 higher than the cumulated impacts on the GN. Thus both H1.a and H1.b are supported by our findings, with a little stronger support on H1.a.

**H4: The JDT-PM has a positive impact on the satisfaction of the RN**
– Strongly supported –

In this hypothesis, there were no sub-hypotheses as only the relationship with the RN had to be verified. According to our findings, the positive impact of the JDT-PM on the RN is significant and positive as we could see in the analysis (section 6.2), without any exception. Indeed, we saw that the probability to occur by chance is lower than 0.05 and the collinearity is verified (Saunders et al., 2009, p. 461) for the relationships with all the following dependent variables, respectively in order of importance: the sense of belonging (RN-A), the competitiveness (RN-C) and the autonomy feeling (RN-P). These findings perfectly go in the same direction than our literature review as it confirms that the JDT-PM has a positive impact on the satisfaction of the RN (section 3.5) (Rodgers & Hunter, 1991, p. 322) Moreover, its impact is quite strong as the
strongest impact (RN-A) is of +0.63 and the weakest is of +0.536. Thus H4 is strongly supported by our empirical findings.

**H3.a: JDT-GS has a positive impact on the satisfaction of the EN – Supported** –

**H3.b: JDT-GS has a positive impact on the satisfaction of the RN – Strongly supported**

**H3.c: JDT-GS has a positive impact on the satisfaction of the GN – Supported**

This is quite a complex hypothesis, at the opposite of the previous one for instance (H4), as it implies three different relationships between JDT-GS with the satisfaction of all the motivational needs: EN, RN and GN. These different relationships were illustrated by three sub-hypotheses dealing individually with each motivational need. For each of these relationships, the positive impact of the JDT-GS is significant and positive as we could see in the analysis (section 6.3), except for the need to express the potential. Indeed, we saw that the probability to occur by chance is lower than 0.05 and the collinearity is verified (Saunders et al., 2009, p. 461) for the relationships with all the following dependent variables, respectively in order of importance: the sense of belonging (RN-A), the competitiveness (RN-C), the autonomy feeling (RN-P), the financial need (EN-S), the skill development (GN-C) and the challenge spirit (GN-A). These findings go in the same direction than our literature review as it confirms that the JDT-GS has a positive impact on the satisfaction of all the motivational needs: EN, RN and GN (section 3.5) (Kelly, 1983, p. 64). Between these motivational needs, the impact on the RN is clearly stronger than on the other needs. In fact, the cumulated impacts on the RN are of 1.299, rather it is of 0.373 on the GN and of 0.330 on the EN. Thus the impact of JDT-GS on the RN is almost four times stronger than on the GN and the EN. Besides, the impacts of the JDT-GS on the GN and the EN are quite similar. Thus, each sub-hypotheses are supported by our findings, however H3.b is much strongly supported compared to H3.a and H3.c.

**7.2 Regressions 4 and 5**

We will now look at the two last regressions which do not support or weakly support the following hypotheses. In order to make it as clear as possible, we will examine in details in which conditions our findings (section 6) do support our hypotheses based on our literature review (section 3).

**H5.a: The JDT-MCBR has a positive impact on the satisfaction of the EN**

– Not supported –

**H5.b: The JDT-MCBR has a positive impact on the satisfaction of the RN**

– Not supported –

**H5.c: The JDT-MCBR has a positive impact on the satisfaction of the GN**

– Not supported –

Based on our bivariate regression analysis (section 6.4), the relationships between the JDT-MCBR and the satisfaction of the three motivational needs (EN, RN and GN) are not verified according to our findings. Indeed, all these relationships are not verified as they are not significant because their probability to occur by chance is always above
0.05 (Saunders et al., 2009, p. 461) as we could see in the analysis (section 6.4). By this way, our findings do not go in the same direction than our literature review as it does not confirm that the JDT-MCBR has a positive impact on the satisfaction of all the motivational needs: EN, RN and GN (section 3.5) (Melancon et al., 2010, p. 343). Thus, none of sub-hypotheses of H5 are supported.

**H2.a: JDT-JE has a positive impact on the satisfaction of the RN – Weakly supported –**

**H2.b: JDT-JE has a positive impact on the satisfaction of the GN – Weakly supported –**

Finally, based on our last bivariate regression analysis (section 6.5), the relationships between JDT-JE and the satisfaction of the RN and the GN are weakly verified. For both the satisfaction of the RN and the GN, the positive impact from the JDT-JE is significant and positive, but only for the one need in each RN and GN. Indeed, we saw that the probability to occur by chance is lower than 0.05 for only two needs, and their collinearity is also verified (Saunders et al., 2009, p. 461). These needs (dependent variables) are, respectively in order of importance: the autonomy feeling (RN-P) and the challenge spirit (GN-A). These findings go in the same direction than our literature review as it confirms the positive impact of the JDT-JE on the satisfaction of both RN and GN (section 3.5) (Patterson, et al., 2004, p. 644). Both impact are quite similar as the impact on the RN is of +0.377 and is of +0.249 on the GN. Thus, both H2.a and H2.b are supported by our findings. However, they are not as strongly supported as most of the other hypotheses as only one third of the expected relationships in H2 are verified and supported.

### 7.3 Revision of the conceptual model

Based on our findings, we can evaluate and revise our conceptual model established in order to examine our hypotheses formulated according to our literature review.
In comparison with our original conceptual model from the literature review (section 3.4), it is possible to see some modifications. In order to examine clearly what reveals this revised conceptual model in comparison with our original conceptual model, we distinguish three main observations: the JDT-MCBR is removed, all the relationships are positives, and the impacts on the RN are privileged.

So, first we can see that the JDT-MCBR is removed as our analysis did not reveal any significant impact on the motivational needs (section 6.4). Indeed, even if was one of our most complex hypotheses with an expected relationship with all the motivational needs (EN, RN and GN), none of these were verified as their probability to occur by chance was higher than 0.05 and should have been lower to be significant (Saunders et al., 2009, p. 461). Thus, as none of the seven potential relationships with motivational needs were verified according to our findings, we removed the JDT-MCBR from our revised conceptual model, leaving only four empowerment JD techniques rather than five.

Next, we can see that all the relationships between the empowerment JD techniques and the motivational needs are positives, which correspond to our proposed conceptual model. Some correlations appear as stronger than others, such as the positive impact of the JDT-GS on the satisfaction of the RN. Indeed, if we cumulate the impacts of the JDT-GS on the RN-A, the RN-C and the RN-P, we obtain a total impact of +1.299,
which is the strongest impact in the whole revised conceptual model. At the opposite, some relationships are not as strong, such as the impact of the JDT-JE on the GN. Actually, among the three GN, only the relationship with the GN-A was verified and revealed as significant. Thus, in our conceptual model, the impact of the JDT-JE is only of +0.249, which is the weakest impact in our whole revised conceptual model.

Finally, this revised conceptual model clearly emphasized the importance of the RN. Indeed, if we cumulate all the impacts, from all the empowerment JD techniques, on each motivational need (EN, RN and GN) we obtain a much stronger impact on the RN (+4.514), as we can see in the table 15. The JDT-FS and the JDT-GS are the most impacting JD empowerment techniques. As we can see in the table 15, their cumulated impacts is very similar, respectively: +2.008 and +2.002. Their impacts are mainly focused on the RN, which the RN-P is the most impacted motivational need in general. At the opposite, the GN-SA is the only motivational need which not impacted at all according to our findings.

To conclude, it can be stated our original conceptual model is almost completely confirmed by our findings. The main assumption which not verified by our findings is the impact of the JDT-MCBR on the motivational need. A part this exception, all the expected relationships are verified by our findings, with results showing more impact on some motivational need from some empowerment JD techniques.

<table>
<thead>
<tr>
<th>Motivational needs</th>
<th>Empowerment JD techniques</th>
<th>JDT-FS</th>
<th>JDT-PM</th>
<th>JDT-GS</th>
<th>JDT-MCBR</th>
<th>JDT-JE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN-S</td>
<td></td>
<td>X</td>
<td>X</td>
<td>+0.330</td>
<td>X</td>
<td>X</td>
<td>+0.330</td>
</tr>
<tr>
<td>EN</td>
<td></td>
<td>X</td>
<td>X</td>
<td>+0.330</td>
<td>X</td>
<td>X</td>
<td>+0.330</td>
</tr>
<tr>
<td>RN-A</td>
<td></td>
<td>+0.269</td>
<td>+0.639</td>
<td>+0.478</td>
<td>X</td>
<td>X</td>
<td>+1.386</td>
</tr>
<tr>
<td>RN-P</td>
<td></td>
<td>+0.329</td>
<td>+0.536</td>
<td>+0.400</td>
<td>X</td>
<td>+0.377</td>
<td>+1.642</td>
</tr>
<tr>
<td>RN-C</td>
<td></td>
<td>+0.514</td>
<td>+0.554</td>
<td>+0.421</td>
<td>X</td>
<td>X</td>
<td>+1.489</td>
</tr>
<tr>
<td>RN</td>
<td></td>
<td>+1.112</td>
<td>+1.729</td>
<td>+1.299</td>
<td>X</td>
<td>+0.377</td>
<td>+4.517</td>
</tr>
<tr>
<td>GN-C</td>
<td></td>
<td>+0.474</td>
<td>X</td>
<td>+0.285</td>
<td>X</td>
<td>X</td>
<td>+0.759</td>
</tr>
<tr>
<td>GN-A</td>
<td></td>
<td>+0.422</td>
<td>X</td>
<td>+0.088</td>
<td>X</td>
<td>+0.249</td>
<td>+0.759</td>
</tr>
<tr>
<td>GN-SA</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>GN</td>
<td></td>
<td>+0.896</td>
<td>X</td>
<td>+0.373</td>
<td>X</td>
<td>+0.249</td>
<td>+1.518</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>+2.008</td>
<td>+1.729</td>
<td>+2.002</td>
<td>X</td>
<td>+0.626</td>
<td>+6.365</td>
</tr>
</tbody>
</table>

*Table 15: Impacts of JDT on the motivational needs*
8. CONCLUSION

8.1 General conclusion

The main purpose of this master thesis was to measure the impact of the empowerment JD techniques on the satisfaction of the blue-collars’ motivational needs, from assembly line systems in two MB factories of the German-French area. By this way, the results of this study are portioned to the managers from these same assembly lines, in order to provide them their blue collars’ perception toward their sources of motivation. Our aim has been to make a theoretical contribution by developing theory through our proposed conceptual model (see section 3.4), which has been tested by conducting a case study of two factories in France and Germany. Indeed, we tested the positive impacts of the empowerment JD techniques on the satisfaction of the motivational needs of the blue-collars. By conducting this research, we are now able to answer the following research question:

What are the effects of the empowerment job design on the satisfaction of the blue-collars’ motivational needs in an automotive assembly line system context?

By doing a case study, the results of the German-French factories independently to their context indicated that our hypotheses were: strongly supported, weakly supported or not supported (sections 7.1 and 7.2). However, as we could see, in general they were supported a part few exceptions. Our analysis showed that among all the empowerment JD techniques, the most impacting empowerment JD techniques are the JDT-FS and the JDT-GS (section 7.3). Our revised conceptual model (figure 5) reveals shows that, among all the empowerment JD techniques, only the relationships with the JDT-MCBR are not verified. Besides, among the motivational needs, the only one with which the relationships are not verified is the GN-SA (table 15). Our revised conceptual model (figure 5) clearly shows that the RN are the most impacted motivational needs. Moreover, it has to be noticed that the strongest impact on the RN comes from the JDT-PM. All of these findings bring us to three main conclusions.

First, according to our respondents, the RN are the most important motivational needs. Second, the empowerment JD technique the most impacting on these needs is the JDT-PM (participative management). Last, if we consider the impact on all the motivational needs, the JDT-FS (feedback system) and JDT-GS (goal setting) are the most impacting empowerment JD techniques.

These conclusions insist on the importance for the blue collars to have interaction with other people (colleagues or managers) in reference to importance of the RN highlighted in our discussion (section 7.3). This underlines the fact our respondents testified about the importance to involve emotions and feelings in their management to stimulate their motivation. Our results showed that a good technique to satisfy these emotions and feeling needs it the participative management (JDT-PM). However, our revised conceptual model (figure 5) and the table 15 also revealed the RN are not only needs important in their motivation. The GN and the EN have also their importance, even if the RN is much more important, according to our findings. The empowerment JD techniques having the strongest global impact on the motivational techniques are the feedback system (JDT-FS) and the goal setting (JDT-GS). Actually, these techniques have a strong impact on the RN (a bit less than the JDT-PM), and also have an impact
on the GN and the EN. However, concerning the EN, our discussion (table 15) revealed that our respondent attached only few importance to it, which means that the blue collars are not very motivated by their financial need, according to our findings.

To summarize, it has to be stated that in an automotive assembly line system, blue collars are mainly motivated by the JDT-FS, the JDT-GS and the JDT-PM, concerning the empowerment JD techniques. Nevertheless, this has to be put in the context of our findings in the situation of our case study about our two MB factories. Moreover, surprisingly the JDT-MCBR (modelling contingent/competence based reward, or good job reward) does not have a significant impact on the blue collars’ motivational needs. Our revised conceptual model (figure 5) rather insists on the importance to satisfy their emotional and feeling needs (relation-oriented needs).

8.2 Theoretical contributions

Through our literature review, we were able to identify some theoretical gaps. First, the literature we read during the heyday of the JD research (1950 to 1980), a lot of these studies were based on the JD design techniques and the JCM (Hackman, 1975) but we noticed that a few researches were about the empowerment process model developed by Conger & Kanungo (1988). We found interesting to investigate in this area as we think it is appropriate to the work conditions of the blue-collars in assembly line system as mentioned in the section 3.1.3 of our literature review. We wanted to test the empowerment JD techniques employed in the empowerment process as developed in the figure 2 (Conger & Kanungo, 1988). Through this test we have been able to establish that this model of empowerment process is actually significant nowadays, at least in our chosen area of study. Indeed, our results reveal that our respondents (assembly line blue-collars) consider the empowerment JD techniques as being important for the satisfaction of their motivational needs (sections 6 and 7). Thus, even if it is an “old” concept (1988) which has not been so much used until today, it seems to be quite appropriate nowadays, at least in certain contexts such as our field of research.

Second, we did not find any JD theories dealing with the satisfaction of the motivation of the assembly line workers. Indeed, we saw that from the introduction of the assembly line concept, especially by Henry Ford in 1913, the blue-collars’ motivation working in assembly line system has rarely been considered by their managers (Wilkinson, 1997, p. 40). Indeed, assembly line workers have generally been considered as being motivated by extrinsic motivation (e.g. salary) (Ryan & Deci, 2000, p. 54). Thus, we saw that their intrinsic motivation has been quite neglected. By this way, this paper has been conducted in order to study if these assembly line blue-collars are also concerns by intrinsic motivation and if yes in which extent empowerment JD techniques could impact on their satisfaction. Our findings actually offered very positive results, and we think that this paper will help to make assembly line managers aware of their blue-collars’ potential of intrinsic motivation in order to increase their performance and to improve their employees job satisfaction.

Lastly, our methodology which consists of conducting our research doing a case study about two factories from the same firm (MB) in two different countries (Germany and France) leads us to conclude also that it is quite unique. In fact, we did not see any studies which based their study on similar sampling.
8.3 Practical implications

Our research can provide inspiration to practitioners in their way to manage their blue-collars working in factories. In fact, we can say that assembly line blue-collars are concerned by empowerment JD techniques.

Indeed, as we just mentioned it in the section 8.2, assembly line workers are generally considered as being mainly motivated by extrinsic motivation such as money. However, this study has demonstrated that these workers are also concerned by intrinsic motivation and so that it is possible to stimulate them by this way too. Indeed, this research actually demonstrates that assembly line workers are, of course not only motivated by money, but also quite sensitive toward the practices of their managers led in order to satisfy their motivational needs (section 8.1).

So, these workers are motivated by empowerment JD techniques such as feedback system (JDT-FS), participative management (JDT-PM) or goal setting (JDT-GS) as we could see in our revised conceptual model (section 7.3). This implies that assembly line managers have the ability to stimulate their blue-collars by other way than financial incentives for instance. We think that this intrinsic motivation has a great potential to stimulate the performance of these blue-collars, using empowerment JD techniques. Thus, assembly line managers would have interest to change certain of their practices providing more feedback to their workers, involving them more in certain decisions, or fixing them more objectives. However, these new practices have to be adapted according to the context. Indeed, as we developed it in our literature review (section 3.1), the context change according to the assembly line sites: managerial practices, company culture, workers’ “sensitiveness”, local practices… Moreover, our findings depend of the subjectivity of our respondents and of the context in which they are placed. Thus, our results about the impact of the empowerment JD techniques on the blue-collars’ motivational needs are potentially not complete. For instance, if this study would have been led on more factories it could have support the impact of the JDT-MCBR on the motivational needs, because of different contexts.

Finally, this research clearly reveals that assembly line workers have a great intrinsic motivational potential which can be developed by their managers. Our discussion (section 7.3) revealed that these intrinsic motivations could especially stimulated through their feeling and emotion (impact of the participative management on the relation-oriented needs). All the more, this can also be in the whole factory’s interest as it can increase its entire performance but also provide more satisfaction to its blue-collars. However, that rises quite a sensitive conflict between the performance of the factory and the satisfaction of their assembly line blue-collar’ motivational needs (Fernandez, 2008, p. 175). Indeed, in any cases, the priority of the factory is to be as efficient as possible, nevertheless this priority does not always go in the same direction than the satisfaction of the blue-collars’ motivational needs (Fernandez, 2008, pp. 181-182). Indeed, especially when the conjuncture is critical, the factory has to go back to its priorities and the satisfaction of its blue-collars is much less considered (Fernandez, 2008, p. 195). Moreover, the satisfaction of the blue-collars’ motivational needs should not make them too exigent and incite their managers to move the site to an area where the labour force is less exigent and more cost-productive competitive (Fernandez, 2008, p. 195).
9. TRUTH CRITERIA

This section provides a reflection on the reliability, generability, validity and replication of our findings. We will develop for readers reflections on how consistent are our findings, if the concepts used are valid and to what extent our research can be generalised and replicated.

9.1 Reliability

In order to evaluate the consistency of our findings, it is important to analyse the reliability when we conduct a research (Bryman & Bell, 2011, p. 162). In fact, the higher our findings reliable, the more it can be used for future research. According to Saunders et al. (2009, p. 156) define reliability as linked closely to the use of research analysis and data collection method that would be able to produce consistent results. To go deeper in the subject, Bryman & Bell (2011, p. 157-158), state that reliability is based on three factors: stability, internal reliability and inter-observer consistency when researchers conduct a quantitative study.

Stability consists of evaluating how stable the measures are over time repeating the study for several times which is not possible for us to do that because of the lack of time and resources (Bryman & Bell, 2011, p. 157). In our case, our research depends a lot on the context of each factory.

Our research fields which are motivation and JD have been studied a lot and some of the theories have been still used by future researchers as the JCM mentioned in the section 1.3 and the SDT mentioned in the section 3.3.4. However, in our case, we studied these fields incremented in a context. The motivation of the blue-collars does not only depend on the managerial practices of the organizations. It also depends on the whole context in which the blue-collars are surrounded and on the personal characteristics of the blue-collars, which we mentioned in the section 3.1. Consequently, we tried to keep a high level of stability through our research method and constructs, but the topic and the field of our research does not help the high stability of our research.

The internal reliability questioned if the items used to measure constructs are related and measure the same element (Bryman & Bell, 2011, p. 158). We have constructed our conceptual based on hypotheses in the section 3.5. We built our hypotheses according to previous studies which have already produced some reflections about motivation and JD techniques and we referred to it to build our questionnaire. So, we tried to use the elements we found in some specific theories of motivation and JD that referred directly to our topics. Also, we used Cronbach’s Alpha to determine the reliability of our constructs and we had finally found that all of our constructs were higher than 0.7. Based on the previous arguments, we can say that our research is reliable.

The inter-observer consistency is linked to the way several researchers got involved in one study; the decisions made between them can make the study more subjective and affect the consistency of the research (Bryman & Bell, 2011, p. 163). To respond to this question, we tried to prevent the bias as much as possible taking all decisions, discussing on each the questions of our survey, the way we conduct our research in order not to influence the answers of the respondents, the choice of the indicators needed to measure the constructs and the way we interpreted the results. Another aspect
that supports the inter-observer consistency is the fact that we conducted a quantitative study which allows statistical tests that enable us to decrease subjectivity. As a consequence, all of the aspects mentioned previously support that the subjectivity of our research is quite low which allow us to say that our results are quite reliable in this aspect.

9.2 Generalizability

We have administered our questionnaire to two factories in two different countries. It was not possible to broaden our study in more countries and more factories to make it more generalizable, for instance, in our sample of blue-collars in Western Europe factories, because of the legislation and labour unions which had constituted a barrier for us. We needed more time and resources to get the approvals of more factories. That is the reason why we were limited to a case study as research design. We thought that, in a less ambitious scale, it was even very interesting to conduct this research in this way because only a few researchers explored the empowerment model for the empowerment JD techniques developed by Conger & Kanungo (1988) that may be very interesting to study in a deeper way. Thus, in the factories scale, we cannot say that our sample is representative to all the blue-collars in these factories because we did not get a sufficient number of respondents to claim that. However, we think that our study is interesting to get preliminary insights of the effects of the empowerment JD techniques on the satisfaction of the blue-collars’ motivational needs that could encourage deeper research in the future. In fact, future researchers can investigate and extend our research in a larger number of factories in France and Germany for more representatively of the sample.

9.3 Validity

According to Saunders et al. (2009, p. 157), validity assess the findings evaluating if the measures of a concept really measures that concept. Bryman & Bell (2011, p. 159) define it as “if the findings are really about what they appear to be about”. Many possibilities can be used to assess validity. According to Bryman & Bell, (2011, p. 165), three factors can be analysed to assess validity: face validity, internal validity and external validity. Face validity refers to whether or not the construct measure the concept (2011, p. 160). In other words, Face validity was ensured in this study as measures which have been tested and verified by previous research. Taking into consideration these aspects, we consider that we used face validity due to the fact that we developed measures based on constructs developed and used already by researchers who found them valid for their research. Indeed, we carefully based our research on previous theories on motivation and job design developed by reliable authors. Hence, we assume the validity of our research.

9.4 Replication

The replication is defined as the possibility for future researchers to repeat a study (Bryman & Bell, 2011, p. 165). Different reasons urge them to replicate a research: the will to verify the findings or the will to extent the study to develop the study in some other contexts (Bryman & Bell, 2011, p. 167). The possibility to replicate is also an indication of the quality and validity of the findings (Bryman & Bell, 2011, p. 165). Therefore all aspects of the research should be explicit and transparent concerning the methods (Bryman & Bell, 2011, p. 165). In order to allow replication of our study we
tried to outline clearly and comprehensively the different methods we used in the method chapters (section 4) about different aspects of our research (sampling techniques, statistical tools, research methodologies, construction of our questionnaire, population chosen and we got accessed to this population). So, we can conclude that we can say that future researcher can replicate our study
10. LIMITATIONS AND FUTURE RESEARCH

This section aims at summarizing the main limitations of our study, underlying the different points that our research is limited and in which areas we can suggest deeper or future research.

A first limitation of our subject is the fact that we conducted our research in only two factories. This induced a case study as research design. Future studies could be to extend the research to other European automotive factories to get a more accurate view of the motivational needs of the blue-collars in the automotive industry in different contexts. Our research can be the starting point of future research for researchers who are curious to know more about how the empowerment JD techniques affect the motivation of the blue-collars.

Furthermore, there is a second limitation regarding our conceptual model. In fact, it is only related to some specific motivational needs that we found in our literature review (section 3). We are actually questioning about the fact that we focused on some specific motivational needs which are those cited the most in literature review (section 3.3.2). In fact, we realised during our research that empowerment JD techniques satisfied further needs than what we mentioned in our conceptual model. We think that motivation is a broad topic and more motivational needs can emerge and be studied by future researches as linked with JD techniques in the context of the assembly line work. That is also the case for JD techniques. Indeed, future researchers could also be explored to test more JD techniques as we were limited to empowerment JD techniques for a model.

Moreover, we think that future research could be made on the motivation of the blue-collars. The work conditions of the blue-collars which are repetitive and monotone as explained in the section 3.1.3 can conduct to future research on the way managers can manage them. Our research is surrounded by an environment and a context which influenced the blue-collars as explained in the section 3.1. Our research did not take into consideration the context of the blue-collars’ work that influence deeply their motivation. Our statistical and quantitative study is not sufficient to understand in a deeper way the motivational needs of the blue-collars. That is the reason why we suggest more research about empowerment managerial practices and motivation as integrated in whole context by conducting for example a qualitative study.

Finally, linked with our results, all the correlations are verified except the JD empowerment technique: modelling contingent/ competence based reward. We think that future research could be made on this JD technique in order to understand better the reasons why this JD technique does not follow the same results as the other techniques. Moreover, we observed in the discussion that participative management was especially adapted to answer to the relation-oriented needs. Nevertheless, it would be interesting to extend the research to the other needs for this JD technique testing for example the correlations of participative management with existence needs and/or growth-oriented needs. In our case, we based our research on the theories of the motivational program to create our hypothesis. Testing more JD techniques and motivational needs would mean to surpass the application of the motivational programs.
REFERENCE LIST


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APPENDIX 1: Questionnaire in English

Questionnaire about motivation in an industrial environment

Dear sir/madam,

We are two French students studying management at Umeå School of Business in Sweden. We are working on a master thesis dealing with the motivation of the employees in the industrial context. We are getting contact with you in order to collect data on the elements which motive you in your work. We would like to precise that this study is absolutely not related to your company.

Your participation in this survey is voluntary, you are free to answer it or not. However we aim for a maximum of respondents and would be particularly grateful for your participation. We ensure that your participation will be completely ANONYMOUS.

We did our best in order to make this questionnaire as time saving and understandable as possible. In fact, it will take only a few minutes to complete it. Thus, for all unclear terms please consider the notes below (definitions and explanation of the terms). All the letters (a, b, c...) in this questionnaire are referred to the definitions in these notes.

Thank you very much in advance for your participation!
Sincerely,

Hong Nguyen and Edouard de Willermin

Questions about you:

1. You are: (Q1)
   □ Male
   □ Female

2. Your age: (Q2)
   □ Less than 20 years old
   □ From 21 to 30 years old
   □ From 31 to 40 years old
   □ From 41 to 50 years old
   □ From 51 to 60 years old
   □ More than 61 years old

Motivation

3. How do you evaluate your motivation for your work? (Q3)
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   $1 - 2 - 3 - 4 - 5 - 6$
4. How do you evaluate the importance of these practices on your motivation? 
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - Feedback (a)  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q4) \)
   - Participative management (b)  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q5) \)
   - Goal setting (c)  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q6) \)
   - Good job reward (d)  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q7) \)
   - Job enrichment (e)  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q8) \)

### Definitions and explanation for terms

**a. Feedback:** situations in which you get information regarding the quality of your work and information about how to improve it.

**b. Participative management:** situations in which you are encouraged to get involved in organizational or strategic decisions.

**c. Goal setting:** action plan designed in order to guide and motivate you toward a goal.

**d. Good job reward:** concept consisting of rewarding best workers who do the best job.

**e. Job enrichment:** concept consisting of increasing the degree of responsibility of your work.

### Feedback (a)

**Reminder:** It refers to the situation in which you get information regarding the quality of your work and information about how to improve it.

5. How do you think feedback (a) help you:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - to increase your sense of belonging to the company?  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q9) \)
   - to feel more autonomous?  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q10) \)
   - to be more competitive toward your colleagues?  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q11) \)

6. How do you think feedback (a) may affect your willingness to:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - develop new skills?  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q12) \)
   - meet new challenges?  
     1 – 2 – 3 – 4 – 5 – 6  
     \( (Q13) \)
- to reach your entire potential?  
  1 – 2 – 3 – 4 – 5 – 6  
  (Q14)

**Participative management (b)**  
**Reminder:** It refers to the situation in which you are encouraged to get involved in organizational decisions.

7. How do you think participative management (b) help you:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - to increase your sense of belonging to the company?  
     1 – 2 – 3 – 4 – 5 – 6  
     (Q15)
   - to feel more autonomous?  
     1 – 2 – 3 – 4 – 5 – 6  
     (Q16)
   - to be more competitive toward your colleagues?  
     1 – 2 – 3 – 4 – 5 – 6  
     (Q17)

**Goal setting (c)**  
**Reminder:** It refers to action plans designed in order to guide and motivate you toward a goal.

8. How do you think goal setting (c) may affect:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - your willingness to improve your financial situation  
     1 – 2 – 3 – 4 – 5 – 6  
     (Q18)

9. How do you think goal setting (c) help you:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - to increase your sense of belonging to the company?  
     1 – 2 – 3 – 4 – 5 – 6  
     (Q19)
   - to feel more autonomous?  
     1 – 2 – 3 – 4 – 5 – 6  
     (Q20)
   - to be more competitive toward your colleagues?  
     1 – 2 – 3 – 4 – 5 – 6  
     (Q21)

10. How do you think goal setting (c) may affect your willingness to:
    (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
    - develop new skills?  
      1 – 2 – 3 – 4 – 5 – 6  
      (Q22)
    - meet new challenges?  
      1 – 2 – 3 – 4 – 5 – 6  
      (Q23)
    - to reach your entire potential?  
      1 – 2 – 3 – 4 – 5 – 6  
      (Q24)

**Good job reward (d)**  
**Reminder:** It refers to the concept consisting of rewarding best workers who do the best job.
11. How do you think good job reward (d) may affect:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - your willingness to improve your financial situation $1 - 2 - 3 - 4 - 5 - 6$
     (Q25)

12. How do you think good job reward (d) help you:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - to increase your sense of belonging to the company? $1 - 2 - 3 - 4 - 5 - 6$
     (Q26)
   - to feel more autonomous? $1 - 2 - 3 - 4 - 5 - 6$
     (Q27)
   - to be more competitive toward your colleagues? $1 - 2 - 3 - 4 - 5 - 6$
     (Q28)

13. How do you think good job reward (d) may affect your willingness to:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - develop new skills? $1 - 2 - 3 - 4 - 5 - 6$
     (Q29)
   - meet new challenges? $1 - 2 - 3 - 4 - 5 - 6$
     (Q30)
   - to reach your entire potential? $1 - 2 - 3 - 4 - 5 - 6$
     (Q31)

**Job enrichment** (e)

*Reminder: It refers to the concept consisting of increasing the degree of responsibility of your work.*

14. How do you think job enrichment (e) help you:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - to increase your sense of belonging to the company? $1 - 2 - 3 - 4 - 5 - 6$
     (Q32)
   - to feel more autonomous? $1 - 2 - 3 - 4 - 5 - 6$
     (Q33)
   - to be more competitive toward your colleagues? $1 - 2 - 3 - 4 - 5 - 6$
     (Q34)

15. How do you think job enrichment (e) may affect your willingness to:
   (1 = Very Poor, 2 = Poor, 3 = Quite Poor, 4 = Quite Strong, 5 = Strong, 6 = Very Strong)
   - develop new skills? $1 - 2 - 3 - 4 - 5 - 6$
     (Q35)
   - meet new challenges? $1 - 2 - 3 - 4 - 5 - 6$
     (Q36)
   - to develop your potential? $1 - 2 - 3 - 4 - 5 - 6$
     (Q37)
This survey is now finished.

Thank you for your participation!

- Hong Nguyen and Edouard de Willermin -
APPENDIX 2: Questionnaire in French

Questionnaire sur la motivation au sein d’un environnement industriel

Bonjour,

Nous sommes deux étudiants français en management à l’université d’Umeå en Suède. Nous travaillons en ce moment sur notre mémoire qui traite de la motivation des employés dans le milieu industriel. Nous nous adressons à vous dans le but de collecter des données sur les éléments qui vous motivent dans votre travail. Nous tenons à préciser que cette étude n’a aucun lien avec votre entreprise.

Votre participation à ce questionnaire est bien sûr volontaire. Cependant, nous avons besoin qu’un maximum de personnes réponde à ce questionnaire pour la qualité de notre étude et nous vous serions très reconnaissants de votre contribution. Nous vous assurons par ailleurs que votre participation restera ANONYME.

Nous avons conçu ce questionnaire dans le but qu’il soit le plus court et le plus compréhensible possible de votre part. En effet, pour plus de clarifications sur les termes techniques, n’hésitez pas à consulter les définitions précisées dans la question 4 de ce questionnaire (définitions et explications des termes). Toutes les lettres indiquées (a,b,c...) présentes dans ce questionnaire se réfèrent directement à ces définitions.

Nous vous remercions par avance pour votre participation!

Très sincères salutations,

Hong Nguyen et Edouard de Willermin

Questions sur vous

2. Vous êtes (Q1)
   □ Un homme
   □ Une femme

2. Votre âge: (Q2)
   □ Moins de 20 ans
   □ Entre 21 et 30 ans
   □ Entre 31 et 40 ans
   □ Entre 41 et 50 ans
   □ Entre 51 to 60 ans
   □ Plus de 61 ans

Motivation

3. Comment évaluez-vous votre niveau de motivation dans votre travail?
   (1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez Fort, 5 = Fort, 6 = Très fort)
   1 – 2 – 3 – 4 – 5 – 6
4. Comment évaluez-vous l’importance des pratiques suivantes dans votre motivation au travail quotidiennement?
(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- Feedback (a)  \[1 – 2 – 3 – 4 – 5 – 6\] (Q4)
- Le management participatif (b)  \[1 – 2 – 3 – 4 – 5 – 6\] (Q5)
- La fixation d’objectifs (c)  \[1 – 2 – 3 – 4 – 5 – 6\] (Q6)
- La récompense du travail bien fait (d)  \[1 – 2 – 3 – 4 – 5 – 6\] (Q7)
- L’enrichissement du travail (e)  \[1 – 2 – 3 – 4 – 5 – 6\] (Q8)

Définitions et explications des termes

b. Management participatif: situations dans lesquelles vous êtes encouragé(e) à être impliqué(e) dans des décisions d’ordre organisationnelles et/ou stratégiques.
c. La fixation d’objectifs: plan d’actions élaborés dans le but de vous guider et de vous stimuler à travers l’établissement d’objectifs (ex: objectifs de production).
d. La reconnaissance du travail bien fait: concept consistant à récompenser les bonnes performances de certains employés.
e. L’enrichissement du travail: concept consistant à élever votre degré de responsabilité.

Feedback (a)
Rappel: le feedback se réfère aux situations dans lesquelles vous êtes amené(e) à échanger sur la qualité de votre travail et sur les possibles améliorations de celui-ci.

5. Dans quelle mesure considérez-vous que le feedback (a) vous aide à:
   (1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- renforcer votre sentiment d’appartenance à votre entreprise?  \[1 – 2 – 3 – 4 – 5 – 6\] (Q9)
- vous sentir plus autonome?  \[1 – 2 – 3 – 4 – 5 – 6\] (Q10)
- développer votre esprit de compétition?  \[1 – 2 – 3 – 4 – 5 – 6\] (Q11)
6. Dans quelle mesure considérez-vous que le feedback (a) affecte votre volonté:

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- de développer vos compétences? \(1 – 2 – 3 – 4 – 5 – 6\) (Q12)
- de relever de nouveaux défis? \(1 – 2 – 3 – 4 – 5 – 6\) (Q13)
- d’exprimer l’intégralité de vos capacités? \(1 – 2 – 3 – 4 – 5 – 6\) (Q14)

**Management participatif (b)**
*Rappel: Cela réfère aux situations dans lesquelles vous êtes encouragé(e) à être impliqué(e) dans des décisions d’ordre organisationnelles et/ou stratégiques.*

7. Dans quelle mesure considérez-vous que le management participatif (b) vous aide à:

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- renforcer votre sentiment d’appartenance à votre entreprise? \(1 – 2 – 3 – 4 – 5 – 6\) (Q15)
- vous sentir plus autonome? \(1 – 2 – 3 – 4 – 5 – 6\) (Q16)
- développer votre esprit de compétition? \(1 – 2 – 3 – 4 – 5 – 6\) (Q17)

**La fixation d’objectifs (c)**
*Rappel: Cela réfère aux plan d’actions élaborés dans le but de vous guider et de vous stimuler à travers l’établissement d’objectifs (ex: objectifs de production).*

8. Dans quelle mesure considérez-vous que la fixation d’objectifs (c) affecte :

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- votre volonté d’améliorer votre situation financière \(1 – 2 – 3 – 4 – 5 – 6\) (Q18)

9. Dans quelle mesure considérez-vous que la fixation d’objectifs (c) vous aide à:

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- renforcer votre sentiment d’appartenance à votre entreprise? \(1 – 2 – 3 – 4 – 5 – 6\) (Q19)
- vous sentir plus autonome? \(1 – 2 – 3 – 4 – 5 – 6\) (Q20)
- développer votre esprit de compétition? \(1 – 2 – 3 – 4 – 5 – 6\) (Q21)
Dans quelle mesure considérez-vous que la fixation d’objectifs (c) affecte votre volonté:

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- de développer vos compétences? 1 – 2 – 3 – 4 – 5 – 6
  \((Q22)\)
- de relever de nouveaux défis? 1 – 2 – 3 – 4 – 5 – 6
  \((Q23)\)
- d’exprimer l’intégralité de vos capacités? 1 – 2 – 3 – 4 – 5 – 6
  \((Q24)\)

La reconnaissance du travail bien fait (d)

Rappel: Cela réfère au concept consistant à récompenser les bonnes performances de certains employés.

Dans quelle mesure considérez-vous que la reconnaissance du travail bien fait (d) affecte:

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- votre volonté d’améliorer votre situation financière 1 – 2 – 3 – 4 – 5 – 6
  \((Q25)\)

Dans quelle mesure considérez-vous que la reconnaissance du travail bien fait (d) vous aide à:

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- renforcer votre sentiment d’appartenance à votre entreprise? 1 – 2 – 3 – 4 – 5 – 6
  \((Q26)\)
- vous sentir plus autonome? 1 – 2 – 3 – 4 – 5 – 6
  \((Q27)\)
- développer votre esprit de compétition? 1 – 2 – 3 – 4 – 5 – 6
  \((Q28)\)

Dans quelle mesure considérez-vous que la reconnaissance du travail bien fait (d) affecte votre volonté:

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- de développer vos compétences? 1 – 2 – 3 – 4 – 5 – 6
  \((Q29)\)
- de relever de nouveaux défis? 1 – 2 – 3 – 4 – 5 – 6
  \((Q30)\)
- d’exprimer l’intégralité de vos capacités? 1 – 2 – 3 – 4 – 5 – 6
  \((Q31)\)

L’enrichissement de votre travail (e)

Rappel: Cela réfère au concept consistant à élever votre degré de responsabilité.

Dans quelle mesure considérez-vous que l’enrichissement de votre travail (e) vous aide à:

(1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez fort, 5 = Fort, 6 = Très fort)
- renforcer votre sentiment d’appartenance à votre entreprise? 1 – 2 – 3 – 4 – 5 – 6 (Q32)
- vous sentir plus autonome? 1 – 2 – 3 – 4 – 5 – 6 (Q33)
- développer votre esprit de compétition? 1 – 2 – 3 – 4 – 5 – 6 (Q34)

15. Dans quelle mesure considérez-vous que l’enrichissement de votre travail (d) affecte votre volonté:
   (1 = Très faible, 2 = Assez faible, 3 = Faible, 4 = Assez Fort, 5 = Fort, 6 = Très fort)
- de développer vos compétences? 1 – 2 – 3 – 4 – 5 – 6 (Q35)
- de relever de nouveaux défis? 1 – 2 – 3 – 4 – 5 – 6 (Q36)
- d’exprimer l’intégralité de vos capacités? 1 – 2 – 3 – 4 – 5 – 6 (Q37)

Ce questionnaire est maintenant terminé.

Nous vous remercions beaucoup pour votre très aimable participation!

- Hong Nguyen et de Willermin -
APPENDIX 3: Abbreviations

<table>
<thead>
<tr>
<th>Terms</th>
<th>Abbreviations</th>
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<tbody>
<tr>
<td>Job Design</td>
<td>JD</td>
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<tr>
<td>Job Characteristics Model</td>
<td>JCM</td>
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<tr>
<td>Mercedes-Benz</td>
<td>MB</td>
</tr>
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<td>Human Resources</td>
<td>HR</td>
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<tr>
<td>Board of Directors</td>
<td>BOD</td>
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<td>Manufacturing Flexibility</td>
<td>MF</td>
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<td>Self-Determination Theory</td>
<td>SDT</td>
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<td>Management-By-Objectives</td>
<td>MBO</td>
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<td>JDT</td>
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<td>Participative Management</td>
<td>JDT-PM</td>
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<td>Goal Setting</td>
<td>JDT-GS</td>
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<td>Feedback System</td>
<td>JDT-FS</td>
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<td>JDT-MCBR</td>
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<td>Job Enrichment</td>
<td>JDT-JE</td>
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<td>EN</td>
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<td>Security Need</td>
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<td>Power Motive</td>
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<td>Competence Need</td>
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<tr>
<td>Achieving Need</td>
<td>GN-A</td>
</tr>
<tr>
<td>Self-Actualizing Need</td>
<td>GN-SA</td>
</tr>
</tbody>
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