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**AN EXPERIMENTAL INVESTIGATION OF THE INTERACTIONS AMONG COMBINATIONS
OF FORMAL MECHANISMS AND SOCIAL NORMS**

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ABSTRACT

Employees often make decisions that involve a trade-off between improving the performance of the own business unit or department and improving overall firm performance. Previous research has shown that such decisions are shaped by formal mechanisms such as incentive and information systems as well as by the descriptive social norms of the firm. This study explicitly recognizes that employees are subject to multiple formal mechanisms and investigates a specific aspect of a combination of formal mechanisms, namely the extent to which each formal mechanism motivates employees to act in the firm's best interest. Relying on theory from social psychology, we hypothesize that (1) combinations in which not all formal mechanisms motivate employees to act in the firm's best interest (i.e. misaligned combinations) lead to a lower degree of employee decisions that are in line with the firm's best interest than when all formal mechanisms motivate employees to act in the firm's best interest (i.e. aligned combinations) and (2) descriptive social norms will drive employee decisions in case of misaligned combinations but not in case of aligned combinations. The results of our experiment are consistent with these hypotheses. Our results contribute to the stream of research that investigates interactions between formal mechanisms and social norms by explicitly taking into account that firms implement multiple formal mechanisms and by investigating the role of a typical characteristic of a combination of formal mechanisms

Keywords: formal mechanisms, social norms, alignment, firm performance

I. INTRODUCTION

While a lot of firms have eagerly embraced intra-firm cooperation as a key aspect of their strategy, the challenge that these firms face is to to refrain employees from taking decisions that benefit their own department or business unit but harm the firm as a whole (Galbraith 2007; Jorgensen and Messner 2009; Roberts 2004). Consequently, managers must understand how employees can be instigated to act in the best interest of the firm. Over the past several decades, researchers in several domains have cast light over the way employees take their decisions. A main finding is that employee decisions are influenced by the economic structure of the firm. Typically, the economic structure consists of various formal mechanisms such as incentive systems and information systems (Milgrom and Roberts 1992). A burgeoning literature, on the other hand, demonstrates that descriptive social norms, which describe how things are usually done in a firm, are also very influential in shaping employee decisions (Cialdini et al. 1990; 2000; Cialdini 2007; Cialdini and Trost 2010). Consistent with the findings of this line of research, firms invest a lot of money in social events to develop descriptive social norms that propagate the importance of intra-firm cooperation. Though a lot of studies have focused on either the economic structure or the social structure as a determinant of employee behavior, recent efforts have begun to explore the interactions between the economic and social structure of the firm (Bloomfield and Tayler 2010; Coletti et al. 2005; Fisher and Huddart 2008).

This study complies with the idea that the economic and social structure of the firm are intertwined and provides theory and experimental evidence to suggest that an important characteristic of the economic structure of the firm - whether all formal mechanisms are designed to induce employees to act in the firm's best interest or not - determines the importance of descriptive social norms for guiding employee decisions. The notion of alignment of a combination of formal mechanisms with the firm's best interest is inextricably intertwined with the observation that employees are influenced by multiple formal mechanisms when making decisions (Merchant and Van der Stede 2007; Roberts 2004). In this perspective, a combination of formal mechanisms is aligned with the firm's best interest if all formal mechanisms motivate employees to act in the firm's best interest. Such a combination provides employees with a coherent message about the expected behavior. A combination of formal mechanisms is misaligned with the firm's best interest if not all formal mechanisms induce employees to act in the firm's best interest.¹ Despite the inconsistency with equilibrium assumptions, misaligned combinations of formal mechanisms are highly prevalent in

¹ For ease of notification, we will use 'aligned combinations of formal mechanisms' when we refer to combinations of formal mechanisms in which all formal mechanisms are aligned with the firm's best interest. 'Misaligned combinations of formal mechanisms' refer to combinations in which not all formal mechanisms are aligned with the firm's best interest. Note that this definition implies that one formal mechanism has to be aligned with the firm's best interest.

practice. Some firms, for instance, heavily focus on incentive systems to instigate employees to take decisions that improve firm performance but do not pay attention to other formal mechanisms. Such an approach leads to an economic structure that sends out incoherent messages about the expected behavior (Roman 2009). Misaligned combinations of formal mechanisms are also observed when firms change their strategy or during firm restructurings (Jorgensen and Messner 2009). Despite the high prevalence of misaligned combinations of formal mechanisms, our understanding of the influence of such combinations on employee behavior is rather limited, a shortcoming that we address with this study.

The main intuition behind our theory is that a misaligned combination of formal mechanisms disperses an incoherent message about the expected behavior which will lead to ambiguity about the expected behavior. Our first hypothesis states that this ambiguity decreases the extent to which employees act in the firm's best interest. Relying on theory and findings from social psychology, which states that descriptive social norms especially drive behavior in ambiguous situations as they become more salient in such situations, we further hypothesize that descriptive social norms shape employee decisions when combinations of formal mechanisms are misaligned but not when they are aligned (Cialdini et al. 1990; Cialdini and Trost 1998; Goldstein and Cialdini 2010; Kallgren et al. 2000). In summary, whereas prior research has provided inconclusive results about the importance of the economic and social structure for employee decision-making, we argue that the social structure is more important for shaping employee decision-making when not all parts of the economic structure motivate employees to act in the firm's best interest.

We conduct an experiment in which the participant's decision either improves departmental performance or firm performance. We manipulate two formal mechanisms (i.e. the employees' incentive system and the information that employees receive about the impact of their actions on firm performance) and the descriptive social norms. The incentive system and the information that participants receive are either focused on optimizing the departmental performance or firm performance. As such, we obtain combinations of formal mechanisms that are either misaligned (i.e. one formal mechanism motivates employees to optimize firm performance while the other motivates employees to optimize departmental performance) or aligned with the firm's best interest (i.e. both formal mechanisms induce employees to act in the firm's best interest). The descriptive social norms are either focused on the importance of improving departmental (no intra-firm cooperation) or firm performance (intra-firm cooperation).

Our results are twofold. First, we demonstrate that misaligned combinations of formal mechanisms lower the extent to which employee decisions are in line with the firm's best interest. This result is consistent with earlier research in psychology and accounting (Gaertner et al. 2002;

Rowe 2004). Importantly, we also obtain this result if the misaligned combination of formal mechanisms is embedded in descriptive social norms that promote intra-firm cooperation. Thus, descriptive social norms that emphasize the importance of intra-firm cooperation to improve firm performance can never correct for the ambiguity that is caused by misaligned combinations of formal mechanisms. More notably, we find evidence for our main hypothesis that descriptive social norms are a more important driver of employee decisions when combinations of formal mechanisms are misaligned. Specifically, descriptive social norms do not influence employee decisions in case of aligned combinations of formal mechanisms while employee decisions in case of misaligned combinations of formal mechanisms are more in line with the firm's interests if the descriptive social norms emphasize the importance of intra-firm cooperation than when they do not emphasize intra-firm cooperation.

The study's primary contribution lies in theoretically and empirically disentangling how the interaction between particular combinations of formal mechanisms and descriptive social norms drives employee decisions. Although researchers have begun to recognize the interactions between the economic and social structure of firms, prior literature has especially considered the influence of different characteristics of single formal mechanisms such as the framing, strength, or intentionality (Christ et al. 2010, Christ 2010; Coletti et al. 2005). However, while it is well-documented that employees are subject to multiple formal mechanisms when making decisions, the influence of characteristics of combinations of formal mechanisms has never been contemplated. Broadening the scope to combinations of formal mechanisms can also explain the contradictions in previous research about the importance of formal mechanisms and descriptive social norms for employee decision-making. In a broader perspective, our study also adds to the debate between sociologists, which emphasize the importance of social norms, and economists, which emphasize the importance of the economic structure of the firm (i.e. the combination of various formal mechanisms).

Our study also adds to recent research in accounting which shows that conformity to descriptive social norms is driven by the implemented formal mechanisms. While Tayler and Bloomfield (2011) shows that the absence or presence of a formal mechanism determines conformity to descriptive social norms because of the different personal norms that are activated, we show that alignment of a combination of formal mechanisms with the firm's interest determines the saliency of the descriptive social norms and thus the conformity to the descriptive social norms.

This research is also important to managers and accountants who design and implement formal mechanisms and can provide the impetus for a change in the descriptive social norms. As firms often implement various formal mechanisms and are often involved in change processes, it is not unlikely that they will end up with a combination of formal mechanisms that is not aligned with

the firm's interest. Our evidence that employee decisions are more in line with the firm's best interest if descriptive social norms promote intra-firm cooperation emphasizes the importance of investing in developing close relationships between the different departments and business-units. However, our study also shows that investing in descriptive social norms that promote intra-firm cooperation can never correct for a misaligned combination of formal mechanisms. Thus, our study implies that managers can increase the extent to which employees act in the firm's best interest by paying more attention (and investing more money) to the alignment of all the formal mechanisms with the firm's best interest.

Finally, our research can be important for future experimental and non-experimental research about the influence of formal mechanisms and descriptive social norms on employee behavior. Although our experiment manipulates whether combinations of formal mechanisms are aligned with the firm's interest, the psychological theory we rely on states that the perception of ambiguity is sufficient for making the descriptive social norms more salient and increasing the reliance on the descriptive social norms. As survey research often has to rely on perceptions of their respondents, survey researchers can use our findings to develop and validate new survey instruments about the perception of ambiguity that is sent out by combinations of formal mechanisms in order to extend current theory about the role of formal mechanisms and descriptive social norms.

II. THEORY AND HYPOTHESES

2.1 Misaligned combinations of formal mechanisms and employee decisions

Firms are a bundling of different entities (i.e. individuals, departments or business units) from which the decisions and actions should be coordinated in order to increase performance (Jensen and Meckling 1976). As the interests of the entities and the firm often diverge, an important task of the manager is to develop an economic structure so that the different entities work together and take decisions that are in the best interest of the firm. Typically, the firm's economic structure consists of multiple formal mechanisms that can be classified in two broad categories: incentive systems and information (Milgrom and Roberts 1992).

Previous studies have emphasized the important role of incentives for obtaining coordination and cooperation between interdependent entities. Bushman et al. (1995), for instance, shows that aggregate performance measures, which are measured at the level of the firm instead of at the level of the entity, increase firm performance when interdependencies between entities increases. Scott

and Tiessen (1999) comes to similar conclusions when investigating the relationship between the weight of team performance in total compensation of team members and team performance. Analyzing compensation of medical group practices, Pizzini (2010) finds that the productive benefits induced by group incentives offset reductions in output associated with free-riding and effort devoted to monitoring.

Information is an equally important mechanism to achieve cooperation between different entities. Although modern information systems make it possible to provide decision-makers with information on a timely basis, it is also important that the information is understandable for the decision-maker in order to make the decision-maker aware of the impact of his decisions on other entities and on firm performance. Rowe et al. (2008), for instance, provides field evidence which shows that the use of technical accounting jargon in summary reports about firm performance initiates competition rather than cooperation between different entities. Wouters et al. (2008) also demonstrates that monetary quantification of differences between the available options, which is a core characteristic of accounting information, improves cross-functional decision-making and leads to a decision that is in the firm's best interest (Carruthers and Espeland 1991). Thus, understandable information about the consequences of a decision facilitates the decision-maker to take into account these consequences and makes it more likely that the decision-maker chooses the option that is in the firm's best interest.

In the current study, we explicitly recognize that decisions of employees are shaped by multiple formal mechanisms in general and by incentive and information systems in particular. The main implication of broadening the scope to multiple formal mechanisms is that combinations of formal mechanisms can be either aligned or misaligned with the firm's best interest. A combination of formal mechanisms is aligned if all formal mechanisms instigate employees to act in the best interest of the firm. If not all formal mechanisms motivate or enable employees to act in the firm's best interest, the combination of formal mechanisms is misaligned. Although misaligned combinations of formal mechanisms are not consistent with equilibrium assumptions, employees are often confronted with misaligned combinations of formal mechanisms. A major reason for the existence of misaligned combinations of formal mechanisms is the nearly continuous involvement in change processes which inevitably implies that the various parts of the economic structure are not in line with the firm's objective function (Jorgensen and Messner 2009). Another reason is that firms often consciously decide to focus on one particular formal mechanism as they believe that this mechanism has the biggest impact on employee behavior.

Misaligned combinations of formal mechanisms provide employees with mixed cues about how they are expected to behave. While firms with misaligned combinations of formal mechanisms

often have a well-specified corporate objective function, the combination of formal mechanisms does not guide employees in how they have to make trade-offs between departmental and firm performance (Jensen 2001). It has been well established in psychology that the presence of mixed cues instigates individuals to give priority to their own interest at the disadvantage of the interest of the group (Kramer 1999; Gaertner 2002; Rowe 2004). Similarly, we expect that the degree to which employees will act in the best interest of the firm will be lower in case of misaligned combinations of formal mechanisms compared to aligned combinations of formal mechanisms. Thus, our first prediction is as follows:

H1: Misaligned combinations of formal mechanisms will lead to a lower degree of employee decisions that are in the best interest of the firm compared to aligned combinations of formal mechanisms.

2.2 The interactive effect between social norms and combinations of formal mechanisms

The full architecture of a firm is broader than the formal mechanisms. Descriptive social norms, which describe how things are usually done within a firm, are also an important part of the firm and have an important influence on employee behavior.² With respect to cooperation between different departments or business units, descriptive social norms of a firm are generally situated between the two ends of a continuum (i.e. high focus on intra-firm cooperation and higher importance of firm performance compared to departmental performance versus low focus on intra-firm cooperation and higher importance of departmental performance compared to firm performance).³ In order to obtain a situation in which intra-firm cooperation is “the way how things are done here”, companies often invest a lot of money in social events and teambuilding events. Although the importance of such events for establishing intra-firm cooperation has been recognized, the question how these descriptive social norms interact with different *combinations* of formal mechanisms has not been investigated yet.

² Social norms are often considered as a single construct. However, psychology literature makes a distinction between descriptive social norms, which refer to perceptions what is done, and injunctive norms, which refer to perceptions of what ought to be done (Goldstein and Cialdini 2010). As we want to refer to the way how things are actually done in an organization, which is not always equal to the way how it should be done, we will explicitly refer to descriptive social norms.

³ Note that for some firms intra-firm cooperation is not part of their strategy. Typically, entities within these firms are not interdependent from each other and firm performance is maximized when each department or business unit focuses on maximizing its own performance. Our study does not focus on such firms.

Researchers in psychology have paid enormous attention to the influence of descriptive social norms on behavior of individuals. Asch (1951), for instance, shows that individuals agree with the wrong answers of the other members of their group and that this effect is strengthened when the other group members are unanimous and show greater discomfort with deviations from their unanimous answer. In a more recent study, Goldstein et al. (2008) finds that hotel guests comply more with the towel-reuse rate of the other hotel guests who had previously stayed in their room than with the towel-reuse rates of reference groups that are considered to be important and personally meaningful to the hotel guests. Also analytical researchers have begun to incorporate social norms in their models and find that behavior deviates from the behavior that can be expected without incorporating the social norms (Fisher and Huddart 2008).

Previous research has been inconclusive about the importance of the economic structure and the descriptive social norms for employee decisions. Maltz and Kohli (1996), for instance, finds that formal mechanisms are more important than the descriptive social norms in directing employee decisions, while Anand et al. (2009) and Cousins et al. (2009) observe that the reverse is true. Prior studies often consider formal mechanisms as one coherent construct or assume that different formal mechanisms are always aligned with the firm's best interest (Doerr et al. 1996). Thus, prior studies fail to incorporate that combinations of formal mechanisms can be either aligned or misaligned, which is an important characteristic of combinations of formal mechanisms (Roberts 2004).

We predict an interactive effect between combinations of formal mechanisms and descriptive social norms. Recall that misaligned combinations of formal mechanisms provide employees with mixed cues about how they are expected to behave. In other words, misaligned combinations of formal mechanisms lead to an ambiguous situation. Theory in social psychology posits that individuals are most likely to use the evidence of other's behavior to decide about the most effective course of action when the situation is novel, ambiguous or uncertain (Cialdini and Trost 1998; Sherif and Murphy 1936; Deutsch and Gerrard 1955). Furthermore, an important postulate of the focus theory of normative conduct is that norms are likely to influence behavior directly to the extent that it is salient (Cialdini et al. 1990; Goldstein and Cialdini 2010; Kallgren et al. 2000). Accordingly, misaligned combinations of formal mechanisms will lead to ambiguity that will make the firm's descriptive social norms a more salient source of information. Therefore, we expect that the influence of descriptive social norms on employee decision-making will be larger when combinations of formal mechanisms are misaligned compared to aligned combinations of formal mechanisms.

Our theoretical reasoning assumes that employees will first consider the formal mechanisms and only consult the descriptive social norms when the combination of formal mechanisms is misaligned. A decision-making strategy in which the decision-maker begins by identifying the most important dimension and only considers other dimensions if the first dimension does not lead to a clear decision is called a lexicographic decision-making strategy. Such a strategy is often used in decisions that have multiple dimensions (Plous 1993). The assumption that the formal mechanisms are the most important dimension is consistent with Messick (1999) who posits that the underlying economic structure of a situation is the most important cue to categorize the situation and to determine appropriate behavior. Furthermore, individuals that enter a firm are often first informed about the formal mechanisms by means of their contract or during information meetings about the working procedures.

Thus, employees confronted with a misaligned combination of formal mechanisms will be confused about the expected behavior and look for a more solid base for decision-making. This will make the descriptive social norms more salient and a more important driver of employee behavior. Conversely, it is less likely that employees confronted with aligned combinations of formal mechanisms will be confused and this will restrain them from consulting the descriptive social norms. This results in the following hypothesis:

H2: The influence of descriptive social norms on the degree to which employee decisions are in the best interest of the firm will be larger for aligned combinations of formal mechanisms than for misaligned combinations of formal mechanisms

H1 and H2 are graphically represented in Figure 1. As predicted by H1, the degree to which employee decisions are in the best interest of the firm is lower when the combination of formal mechanisms is misaligned compared to aligned combinations of formal mechanisms. Following H2, the variation in descriptive social norms will lead to a difference between misaligned combinations of formal mechanisms but not between aligned combinations of formal mechanisms.

Insert Figure 1 About Here

3.1 Participants and Procedure

We recruited 277 students from an undergraduate management accounting class of a large West-European university to participate in a computer-based experiment. 64 (36) percent of the participants were male (female) and the average age was 20.5 years. Participants receive a course credit for participating in the experiment and they could win film tickets based on their performance on the task. In Section 3.3 we will explain how participants could win film tickets.

We use a 3 (Combination of Formal Mechanisms) X 2 (Descriptive Social Norms) between-subjects experimental design to test our hypotheses. By manipulating the incentive system and the information system such that they are either focused on improving firm performance or departmental performance, we can form three different combinations of formal mechanisms. The first (second) combination has an incentive system that is focused on improving departmental (firm) performance and an information system that is focused on improving firm (departmental) performance. So, the first two combinations are misaligned combinations. The third combination has an incentive system and information system that are both focused on improving firm performance (i.e. aligned combination).

At the beginning of the experiment, participants are randomly assigned to one of the six conditions. The experiment consists of three main parts. In the first part, participants read a scenario in which the incentive system, the information system and the descriptive social norms are explained. The experimental scenario was explained over different screens and subjects could read the information on each screen as long as they can but they could not go back to earlier screens. Based on this scenario, participants had to take decisions in the second part of the experiment. The third part consists of an ex-post questionnaire.

3.2 Experimental Task

Subjects acted as purchasing managers making supplier selections for a virtual firm that produces parquet floors and sells them to the final customer. As the goods and services delivered by suppliers influence all the departments of a company as well as the satisfaction of the final customers, supplier selections are a good example of an important decision that influences firm performance and requires cooperation between different departments (Heikkilä 2002; Sheth et al. 2009). The scenario mentioned that the strategy of the current CEO emphasizes the importance of intra-firm cooperation to increase firm performance. It was further explained that the current

supplier of wood, which is the most important component of parquet floors and an important determinant of customer satisfaction, has stopped the production of wood for parquet floors. In order to make the experimental task not overly complex, it was told to the participants that the overall performance of a supplier is based on two metrics: the total costs of a supplier and the revenue-generating possibilities of a supplier. The total costs of a supplier refer to all the costs that a supplier causes within the firm such as purchasing cost, costs of waste, storage costs and administrative costs.⁴ The revenue-generating possibilities of a supplier refer to the influence a supplier has on customer satisfaction and thus on the revenues of the firm to which the supplier delivers his goods and services. Although suppliers were traditionally evaluated on the total costs that they cause in the buying firm, companies are increasingly aware of the fact that suppliers also can generate revenues if the characteristics of the goods and services they deliver match with customer preferences (Plank and Ferrin 2002). Consequently, in order to select a supplier that optimizes firm performance, purchasing managers have to make a trade-off between the total costs that a supplier causes and the revenues that he generates (Wouters et al. 2005). To focus subjects' attention on the trade-off between the total costs and the revenue-generating possibilities, the intra-firm cooperation is limited to cooperation between the purchasing department, which often calculates the total costs of a supplier, and the marketing department, which has a good idea about customer preferences and the impact of a new supplier on the firm's revenues (Ivens et al. 2009). It is important to mention that subjects in all the conditions receive the same information about the total costs. Specifically, for each supplier, they all receive one number that reflects the total costs of that particular supplier. Our manipulation of the information system varies the way in which the revenue-generating possibilities of a supplier are represented. This will be explained in Section 3.3 of this study.

After reading the scenario, subjects had to make six supplier selections. Each supplier selection was presented on one screen. Subjects could take as much time as they want to make a decision but once a final decision was made, they could not change their decision anymore. To avoid order effects, the sequence of the six supplier selections was randomized. Subjects received information about the total costs and the revenue-generating possibilities for each of the two new suppliers as well as for the current supplier. To avoid that the results are driven by the movement of the total costs towards the current supplier, we differed the six supplier selections with respect to the movement of the total costs towards the current supplier.⁵

⁴ The total costs of a supplier are similar to the Total Cost of Ownership of a supplier (Degraeve and Roodhooft 2001). However, to avoid any connotations with this technique, we do not label the total costs of a supplier as the 'Total Cost of Ownership'.

⁵ In two supplier selections, the total costs of both suppliers was higher compared to the total costs of the current supplier, in two supplier selections the total costs of both suppliers was lower compared to the total costs of the current supplier,

For each supplier selection, subjects had to indicate their purchase intention for both suppliers by moving a slider over a horizontal bar.⁶ By doing this, they divided 100 points between the two new suppliers. The more points they gave at a supplier, the higher their purchase intention for that supplier. If subjects were indifferent between both suppliers, then both suppliers received 50 points. Based on the subjects' purchase intention, we constructed the dependent variable for our statistical tests. We transformed the purchase intention to a scale from zero to 100 where zero indicates the highest preference for the supplier that optimizes the performance of the purchasing department (i.e. supplier that causes the lowest total costs) and 100 indicates the highest preference for the supplier that optimizes the performance of the firm as a whole (i.e. supplier that optimizes the trade-off between total costs and revenue-generating possibilities). Thus, the higher the score for our dependent variable, the more subjects prefer a supplier that improves overall firm performance. For our statistical tests, we take for each subject the average score of the six supplier selections. We will call our dependent variable the degree of firm-optimizing supplier selections.

3.3 Experimental Manipulations

The incentive system is manipulated by providing participants with an incentive to maximize the performance of the purchasing department (i.e. minimize the total costs of a supplier) or to maximize firm performance (i.e. optimize the trade-off between revenue-generating possibilities and total costs). The department-based incentive formula is as follows:

Total costs of a supplier – 10% of the revenues that a supplier will generate if he is selected.

Subjects with the department-based incentive were informed that they should focus on minimizing the value of their incentive formula (i.e. minimizing total costs of a supplier). The firm-based incentive formula is as follows:

and in two supplier selections the total costs of one supplier was higher while the total costs of the other supplier was lower compared to the current supplier. Within each group of two supplier selections, there was one (one) supplier selection in which the total costs of both new suppliers were in a small (large) range around the total costs of the current supplier.

⁶ Marketing research has already shown that purchase intention scales are good predictors of real buying behavior (Wright and MacRae 2008).

Revenues that a supplier will generate if he is selected – Total costs of a supplier

Subjects with the firm-based incentive were informed that they should aim at maximizing their incentive formula (i.e. maximizing the contribution of a supplier to the overall firm profit). The manipulation of the incentive system is based on the distinction between local (i.e. department-based) and aggregate (i.e. firm-based) performance measures (Bushman et al. 1995; Dumond 1994; Plank and Ferrin 2002). It is further important to mention that the way in which subjects could win film tickets is based on their performance as calculated following their incentive system. Specifically, if one assigns more than 50 points to the correct supplier based on the incentive system, then one earned that number of points. If one assigned more than 50 points to the wrong supplier based on the incentive system, then the number of points that is assigned to the wrong supplier is subtracted from the total number of points. If one was indifferent between the two suppliers (i.e. both suppliers 'receive' 50 points) then one cannot win or lose points. So, only the majority of the points that were assigned to a supplier were taken into account to calculate the total number of points. In each condition, the four participants with the highest number of points received a film ticket with a value of 8 EUR.

The *information system* is manipulated by presenting the revenue-generating possibilities of a supplier in a monetary form or by means of rankings. In both manipulations, subjects were informed that wood has three important characteristics of equal importance (durability, strength, and maintenance) that can influence customer satisfaction. If subjects receive information in a monetary form, then they observe one number that indicates the revenues that the firm will generate if a particular supplier is chosen. For instance, if the subject chooses for supplier A (B) then the firm's revenues will increase with 7 200 EUR (1 800 EUR). The rankings indicate the relative position of a supplier for each of the three characteristics. Each supplier has a ranking (one, two or three) for each of the characteristics and the rankings are constructed in such a way that the supplier that generates the largest revenues outperforms the other supplier in two out of three characteristics. As such, the monetary quantified information and rankings are economically equivalent and should lead to the same supplier choice. Previous research has emphasized the importance of monetary quantification if the consequences of a decision are dispersed over different departments or business units (Wouters et al. 2005; 2008). By monetary quantifying the different consequences, employees from different departments can more easily compare the different consequences of a certain decision compared to the situation in which each department reports the consequences of the decision in its own "language". Monetary quantification of the various consequences of a decision should thus enable the employee to act in the firm's best interest. Rankings, on the other hand, should reflect the difficulties that employees encounter when they

receive information in a typical departmental language (Rowe et al. 2008) (see Appendix 1, Panel A).⁷

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The *descriptive social norms* are manipulated by a scenario and are based on the framework of Rousseau (1990). Rousseau (1990) argues that ‘the way how things are done’ in a firm has five determinants: material artefacts (i.e. the physical manifestations of the informal context), patterns of activity (i.e. decision-making, coordination and communication mechanisms), behavioral norms (i.e. beliefs of employees regarding acceptable and unacceptable behavior), values (i.e. priorities assigned to certain states or outcomes) and fundamental assumptions. In the conditions in which the descriptive social norms (do not) promote intra-firm cooperation, we manipulated the five determinants towards (low) high intra-firm cooperation. As such, descriptive social norms are either department-based or firm-based (see Appendix 1, Panel B).

IV. RESULTS

4.1 Manipulation Checks and Descriptive Statistics

To ensure that the experimental manipulations provided appropriate contrasts between the different conditions, we asked questions about the importance of total costs of a supplier in the incentive system, the understandability of the information about the revenue-generating possibilities, and the degree of cooperation between purchasing and marketing. Results from t-tests indicate that the means of the questions were significantly different between the conditions in the predicted direction ($t=2.28$, $p<0.05$ for the incentive system; $t=7.76$, $p<0.01$ for the information system, $t=26.20$, $p<0.01$ for the descriptive social norms). Analyses of the answers on questions about the motivation to perform well on the task, clarity of the experimental scenario, and entering into the scenario shows that the means are all significantly larger than the midpoint of our scale ($p<0.01$ for all tests) and that there are no differences between experimental conditions ($p>0.15$ for all tests).

⁷ It was further mentioned in the scenario that the CEO has determined whether the information about the revenue-generating possibilities should be expressed in monetary form or by means of rankings. In other words, the information system is installed by the CEO and can be considered as a formal mechanism.

⁸ The current supplier is also mentioned in the rankings. However, subjects are told that the current supplier no longer produces wood for parquet floors and that one of both new suppliers has to be chosen.

The descriptive statistics about the degree of firm-optimizing supplier selections, the number of supplier selections with a purchase intention higher than 50, and the dispersion of the subjects' purchase intentions over the quintiles of our zero to 100 scale are reported in Table 1 and 2.⁹ The cumulative distribution of the subjects' purchase intentions over the different quintiles is depicted in Figure 2.¹⁰ This figure shows that the subjects' purchase intentions are more equally dispersed over the different quintiles in case of misaligned combinations. For aligned combinations of formal mechanisms, we observe a big jump in the cumulative distribution at the fifth quintile. This shows that a high proportion of the subjects in these conditions have a high preference for the supplier that optimizes firm performance.

Insert Table 1 and 2 and Figure 2 About here

4.2 Hypothesis 1

Table 3 presents the results for our test of H1. H1 predicts that the degree to which employees take decisions in the best interest of the firm will be lower for misaligned combinations of formal mechanisms than for aligned combinations of formal mechanisms. Consistent with H1, we find that the degree of firm-optimizing supplier selections is significantly lower for misaligned combinations than for aligned combinations of formal mechanisms ($t=12.35$, $p<0.01$). We find the same result if we make a distinction between the two different types of misaligned combinations of formal mechanisms ($t=10.27$, $p<0.01$ for the department-based incentive system and firm-based information system; $t=11.12$, $p<0.01$ for the firm-based incentive system and department-based information system). Analyzing each descriptive social norms-condition separately also shows that the degree of firm-optimizing supplier selection conditions is significantly lower for misaligned combinations than for aligned combinations ($t=7.32$ ($t=10.62$), $p<0.01$ ($p<0.01$) for descriptive social norms that (do not) promote intra-firm cooperation). Making a distinction between the two different combinations of misaligned formal mechanisms further confirms our results ($t=6.00$ ($t=8.90$), $p<0.01$ ($p<0.01$) for the department-based incentive system and firm-based information system when descriptive social norms (do not) promote intra-firm cooperation; $t=6.64$ ($t=9.48$), $p<0.01$ ($p<0.01$) for the firm-based information system and department-based information system when descriptive

⁹ We will also run our hypothesis tests for the number of supplier selections with a purchase intention higher than 50 as a supplier selection can also be conceptualized as a 0/1 decision.

¹⁰ Note that a higher score for the degree of firm-optimizing supplier selections implies that one has a higher preference for suppliers that optimize overall firm performance. Consequently, a higher number of supplier selections with a purchase intention higher than 50 and more supplier selections with a purchase intention in the upper quintiles indicate also a higher preference for suppliers that optimize overall firm performance.

social norms (do not) promote intra-firm cooperation.) Our inferences do not change if we consider the number of supplier selections with a purchase intention higher than 50 as the dependent variable (results not reported). Collectively, these results provide strong support for H1 and are consistent with previous research (Gaertner et al. 2002; Rowe 2004).

Insert Table 3 About Here

4.3 Hypothesis 2

H2 considers the influence of the descriptive social norms for different combinations of formal mechanisms. Specifically, H2 posits that the influence of the descriptive social norms on employee decision-making is higher for misaligned combinations than for aligned combinations. This should show up as an interaction effect between the combination of formal mechanisms and descriptive social norms.

Table 4, Panel A provides the results of an analysis of variance (ANOVA) with *combination of formal mechanisms* and *descriptive social norms* as the independent variables and the *degree of firm-optimizing supplier selections* as the dependent variable. Results show a significant interaction of combination of formal mechanisms and descriptive social norms ($F=4.20$, $p<0.01$). Simple effects analysis (see Table 4, Panel B) indicates that the degree of firm-optimizing supplier selections is significantly higher for misaligned combinations that are surrounded by descriptive social norms that promote intra-firm cooperation ($t=3.29$, $p<0.01$ for the department-based incentive system and firm-based information system; $t=3.23$, $p<0.01$ for the firm-based incentive system and department-based information system), while there is no significant difference in the degree of firm-optimizing supplier selections between aligned combinations ($t=0.30$, $p>0.75$). Consistent with the idea that the misaligned combination is the driver of the result rather than the type of misaligned combination, we find no significant difference between both types of misaligned combinations within each condition of descriptive social norms ($t=0.64$ ($t=0.60$), $p>0.50$ ($p>0.50$) for descriptive social norms that (do not) promote intra-firm cooperation). This pattern of results is depicted in Figure 3. Analyses for the average number of supplier selections with a purchase intention higher than 50 lead to the same inferences (see Table 5 and Figure 4).

Overall, our results are consistent with the theory that misaligned combinations of formal mechanisms make the descriptive social norms more salient which instigates employees to rely on the descriptive social norms to make their decisions.

Insert Table 4 and 5 About Here

Insert Figure 3 and 4 About Here

In order to rule out that our results are driven by a particular supplier selection, we did our analyses for each supplier selection separately. Results of these analyses show that the interaction effect between combination of formal mechanism and descriptive social norms is significant in 4 out of 6 supplier selections. Results for the simple effects show that only one out of 18 simple effects is not significant while all other simple effects are significant and in the predicted direction. Importantly, we never find a significant difference between the aligned combinations. We also repeat our analyses for each period separately as the order of the supplier selections is randomized in our experiment. Results show that the interaction effect is significant in 4 out of 6 supplier selections and that the interaction effect is not significant in the first two periods. Furthermore, all the 18 simple effects are significant in the predicted direction. Collectively, the results for the different supplier selections and for the different periods provide evidence that our results are not driven by a particular supplier selection or a particular period.

4.4 Additional Analyses

In order to further corroborate our results, we report the results of additional analyses in this section. First, we asked in the ex-post questionnaire questions about the understanding of the way in which employees of the virtual company are rewarded (“I understand the way in which I am rewarded by the company”) and about the easiness to take into account the information about the revenue-generating possibilities (“It was difficult to take into account the information about the revenue-generating possibilities”). Analyses of the responses show that subjects better understand the way they are rewarded ($t=1.92$, $p<0.10$) and that they find it easier to take into account the information about the revenue-generating possibilities ($t=3.47$, $p<0.01$) when the incentive system

and the information system are both aligned with the firm's best interest. These results provide further evidence that misaligned combinations of formal mechanisms lead to ambiguity.

We also analyzed the response times for making the six supplier selections. If our assumption is correct that misaligned combinations lead to perceptions of conflict and ambiguity then we should observe longer response times for misaligned combinations than for aligned combinations (Smith and Henry 1996). Comparing the total time that subjects need to make the supplier selections show that the difference between conditions with aligned and misaligned combinations is significant in the predicted direction ($t=1.78$, $p<0.10$). On average, subjects that are confronted with misaligned combinations need 7.7% more time to make their decisions.

Our ex-post questionnaire also contains questions about the confidence that subjects had in the decisions they had made ("I have confidence in the decisions that I have made") and about the personal belief concerning their performance ("I believe that I have performed well on this task"). Analysis of the responses do not reveal any significant differences between the experimental conditions ($F=0.99$, $p>0.40$ for the question about confidence; $F=0.89$, $p>0.45$ for the question about belief in own performance). These analyses show that the reliance on the descriptive social norms is able to rule out the ambiguity that is caused by the misaligned combinations of formal mechanisms. The absence of any difference between subjects that encounter descriptive social norms that promote intra-firm cooperation and those that are confronted with descriptive social norms that do not promote intra-firm cooperation shows that compliance with 'how things are done' is an important determinant for subjective feelings about the own behavior and decisions ($t=1.25$, $p>0.20$ for the question about confidence; $t=1.01$, $p>0.30$ for the question about belief in own performance).

V. CONCLUSIONS

In companies that consider intra-firm cooperation as an important determinant of their performance, employees have to make a lot of decisions that require a trade-off between improving the performance of the own department or business unit or improving overall firm performance. Several decades of research has shown that the extent to which employees act in the firm's best interest is driven by formal mechanisms as well as by the descriptive social norms of the firm (Cialdini and Trost 2010; Merchant and Van der Stede 2007; Milgrom and Roberts 1992). Starting from the idea that employees are confronted with multiple formal mechanisms, our first prediction is that misaligned combinations of formal mechanisms lower the degree to which employees act in the firm's best interest. Relying on the finding from psychology that descriptive social norms are

especially important in ambiguous situations, our second prediction is that descriptive social norms will be a more important driver of employee decisions for misaligned combinations of formal mechanisms than for aligned combinations of formal mechanisms. Our experimental results are consistent with these predictions

This study contributes to the literature that examines the interaction between the economic and social structure of the firm. First, this study extends a recent stream of research that analyzes the influence of formal mechanisms on employee decisions. While prior studies examine variations of a *single* formal mechanism, this study takes into account that firms implement *multiple* formal mechanisms and provides theory and evidence that employees confronted with misaligned combinations of formal mechanisms rely on the descriptive social norms to make their decisions. Second, our study also contributes to recent studies about the influence of descriptive social norms in firms. Tayler and Bloomfield (2011), for instance, shows that conformity to descriptive social norms is determined by the type of personal norm that is activated (i.e. self-interested or socially-interested personal norm) which is influenced by the implementation of a formal mechanism. As in Tayler and Bloomfield (2011), our study shows that conformity to descriptive social norms is affected by the presence of a formal mechanism. However, as we show that conformity to descriptive social norms is higher for misaligned combinations of formal mechanisms, we take the presence of formal mechanisms as a starting point and vary the type of formal mechanisms that are implemented. Furthermore, while Tayler and Bloomfield (2011) took the approach of experimental economics to manipulate descriptive social norms, our study manipulates the descriptive social norms in the tradition of psychology-based experimental work. Although direct comparisons between both approaches are difficult, each approach has its own advantages and disadvantages. Using both approaches can improve and refine our knowledge about the role of descriptive social norms.

From a practical perspective, the results of this study are useful to managers and accountants who are responsible for the implementation of formal mechanisms. On the one hand, our results provide a justification for the huge amounts of money that firms invest in developing good relationships between the various entities of the firm. As firms are often involved in change processes or only focus on one type of formal mechanism, it is not unlikely that they will end up with a misaligned combination of formal mechanisms. Based on our findings, descriptive social norms that promote the importance of intra-firm cooperation increase the extent to which employees act in the firm's best interest in such situations. On the other hand, our results also show that descriptive social norms that promote intra-firm cooperation can never correct for the ambiguity caused by a misaligned combination of formal mechanisms. Thus, managers should reconsider the huge amounts of money that they invest in developing good relationships between the various entities. Indeed,

investing the same amount of money in the development of aligned combinations of formal mechanisms could significantly increase the degree to which employees' decisions are in the firm's best interest. As the marginal costs and marginal benefits of obtaining aligned combinations of formal mechanisms seem to be determined by industry and firm characteristics, future survey and archival research can examine whether firms allocate money to the activities that should benefit them the most given their marginal costs and benefits of obtaining an aligned combination of formal mechanisms.¹¹

The current study is subject to several limitations which provide avenues for future research. First, we only manipulate two formal mechanisms in our experiment to make our design not overly complex. As employees are subject to more than two formal mechanisms, our experiment is a simplification and future research can investigate whether our results hold in more complex situations. As our theory does not specify the number of formal mechanisms, we hypothesize that the addition of formal mechanisms will not alter the results. Testing the boundary conditions of our theory is an important task for future research. Second, our experimental design does not allow us to test longitudinal consequences of aligned combinations of formal mechanisms on the descriptive social norms. As Coletti et al. (2005) show that a strong formal mechanism can enhance the informal relationships between individuals, it would be interesting to investigate whether aligned combinations of formal mechanisms can alter descriptive social norms that do not promote intra-firm cooperation. Such a finding would further emphasize the importance of developing aligned combinations of formal mechanisms.

¹¹ For some firms, the marginal benefits of obtaining aligned combinations of formal mechanisms (i.e. the increase in the degree to which employees take decisions in the best interest of the organization) are higher than the marginal costs (i.e. salaries paid to controllers that should develop aligned formal control mechanisms, costs for continuously monitoring whether employees perceive ambiguity regarding the expected behavior). As a result, these firms should invest in developing aligned combinations of formal mechanisms. For other firms, the marginal costs of obtaining aligned combinations of formal mechanisms are higher than the marginal costs. These firms should invest in developing descriptive social norms that promote intra-firm cooperation.

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TABLE 1: Descriptive Statistics

Table 1 reports the mean and (standard deviation) for the two main dependent variables of this study: the degree of firm-optimizing supplier selections and the number of supplier selections with a purchase intention higher than 50. The degree of firm-optimizing supplier selections is calculated as the average of the purchase intention of the 6 supplier selections. The purchase intention for each supplier selection is scaled from 0 to 100 and a higher (lower) purchase intention indicates a higher preference for the supplier that optimizes firm (departmental) performance. The number of supplier selections with a purchase intention higher than 50 indicates in how many supplier selections the participants' purchase intention is higher than 50 (i.e. how many times the participants have a preference for the supplier that optimizes firm performance). A higher number for this dependent variable thus indicates a higher preference for the supplier that optimizes firm performance. In Table 1, 'Low' refers to the conditions in which the descriptive social norms do not promote intra-firm cooperation and 'High' refers to the conditions in which the descriptive social norms promote intra-firm cooperation.

	Misaligned Formal Control Mechanisms				Aligned Formal Control Mechanisms	
	Department-based Incentive System + Firm-based Information System		Firm-based Incentive System + Department-based Information System		Firm-based Incentive System + Firm-based Information System	
	Low	High	Low	High	Low	High
Degree of firm-optimizing supplier selections	40.95 (35.65)	57.48 (31.66)	37.91 (20.71)	54.26 (19.71)	87.90 (13.81)	86.40 (15.46)
Number of Supplier Selections with a Purchase Intention > 50	2.48 (2.49)	3.57 (2.30)	2.04 (1.67)	3.54 (1.76)	5.62 (0.61)	5.49 (0.83)
Number of Participants	46	47	46	46	45	47

TABLE 2: Quintile Distribution of the Degree of Firm-Optimizing Supplier Selections

Table 2 reports the quintile distribution and the (cumulative quintile distribution) of the degree of firm-optimizing supplier selections for the different conditions. In Table 2, 'Misaligned 1' refers to the combination of a department-based incentive system and a firm-based information system. 'Misaligned 2' refers to the combination of a firm-based incentive system and a department-based information system. 'Aligned' refers to the combination of a firm-based incentive system and a firm-based information system. 'Low' refers to the conditions in which the descriptive social norms do not promote intra-firm cooperation and 'High' refers to the conditions in which the descriptive social norms promote intra-firm cooperation.

		0-20	21-40	41-60	61-80	81-100
HIGH	Misaligned 1	0.22 (0.22)	0.17 (0.39)	0.02 (0.41)	0.21 (0.62)	0.38 (1)
	Misaligned 2	0.18 (0.18)	0.18 (0.37)	0.08 (0.45)	0.33 (0.78)	0.22 (1)
	Aligned	0.04 (0.04)	0.04 (0.08)	0.01 (0.09)	0.16 (0.25)	0.76 (1)
LOW	Misaligned 1	0.45 (0.45)	0.13 (0.58)	0.03 (0.60)	0.16 (0.75)	0.25 (1)
	Misaligned 2	0.32 (0.32)	0.26 (0.58)	0.10 (0.68)	0.23 (0.92)	0.08 (1)
	Aligned	0.01 (0.01)	0.03 (0.04)	0.03 (0.08)	0.17 (0.25)	0.75 (1)

TABLE 3:

Hypothesis 1

Table 3 reports the results for Hypothesis 1 for the degree of firm-optimizing supplier selections. Panel A does not make a distinction between the two types of misaligned formal control mechanisms. In Panel B and Panel C, a distinction between the two types of misaligned formal control mechanisms is made. Misaligned 1 refers to the combination of a department-based incentive system and a firm-based information system. Misaligned 2 refers to the combination of a firm-based incentive system and a department-based information system. Aligned refers to the combination of a firm-based incentive system and a firm-based information system. Each panel contains overall results (i.e. no distinction between descriptive social norms – conditions), and results for each descriptive social norm – condition separately.

Panel A: Misaligned versus Aligned Formal Control Mechanisms

	Overall	Descriptive Social Norms that Promote Intra-Firm Cooperation	Descriptive Social Norms that Promote Intra-Firm Cooperation
Misaligned	47.70	55.89	39.42
Aligned	87.13	86.40	87.90
T-test	12.35 ^{***}	7.32 ^{***}	10.62 ^{***}

Panel B: Department-based Incentive System + Firm-based Information System Versus Aligned Formal Control Mechanisms

	Overall	Descriptive Social Norms that Promote Intra-Firm Cooperation	Descriptive Social Norms that Promote Intra-Firm Cooperation
Misaligned 1	49.30	57.48	40.95
Aligned	87.13	86.40	87.90
T-test	10.27 ^{***}	6.01 ^{***}	8.90 ^{***}

Panel C: Firm-based Incentive System + Department-based Information System Versus Aligned Formal Control Mechanisms

	Overall	Descriptive Social Norms that Promote Intra-Firm Cooperation	Descriptive Social Norms that Promote Intra-Firm Cooperation
Misaligned 2	46.08	54.26	37.91
Aligned	87.13	86.40	87.90
T-test	11.12 ^{***}	6.64 ^{***}	9.48 ^{***}

TABLE 4:

Hypothesis 2: Degree of Firm-Optimizing Supplier Selections

Table 4 reports the results for Hypothesis 2 for the degree of firm-optimizing supplier selections as dependent variable. Panel A contains the Anova-results. The simple effects of interest are reported in Panel B. ‘Low’ refers to the conditions in which the descriptive social norms do not promote intra-firm cooperation and ‘High’ refers to the conditions in which the descriptive social norms promote intra-firm cooperation.

Panel A: Anova results

Source	Df	SS	MS	F	p-value
Model	5	108,570.07	21,714.01	36.93	<0.01
Error	271	159,342.76	587.98		
Corrected Total	276	267,912.83			

Factor	Df	SS	MS	F	p-value
Descriptive Social Norms	1	7,574.09	7,574.09	12.88	<0.01
Alignment	2	96,257.79	48,128.90	81.85	<0.01
Descriptive Social Norms x Alignment	2	4,941.65	2,470.83	4.20	<0.05

Panel B: Simple Effects

Test	prediction	t-stat	p-value
A: Effect of descriptive social norms for combination between department-based incentive system and firm-based information system	$\mu_{low} < \mu_{high}$	3.29	<0.01
B: Effect of descriptive social norms for combination between firm-based incentive system and department-based information system	$\mu_{low} < \mu_{high}$	3.23	<0.01
C: Effect of descriptive social norms for combination between firm-based incentive system and firm-based information system	$\mu_{low} = \mu_{high}$	0.29	0.77

TABLE 5:

Hypothesis 2: Number of Supplier Selections with a Purchase Intention Higher than 50

Table 5 reports the results for Hypothesis 2 for the number of supplier selections with a purchase intention higher than 50. Panel A contains the Anova-results. The simple effects of interest are reported in Panel B. 'Low' refers to the conditions in which the descriptive social norms do not promote intra-firm cooperation and 'High' refers to the conditions in which the descriptive social norms promote intra-firm cooperation.

Panel A: Anova results

Source	Df	SS	MS	F	p-value
Model	5	511.24	102.25	33.12	<0.01
Error	271	836.62	3.09		
Corrected Total	276	1,347.86			

Factor	Df	SS	MS	F	p-value
Descriptive Social Norms	1	46.68	46.68	15.12	<0.01
Alignment	2	432.31	216.15	70.02	<0.01
Descriptive Social Norms x Alignment	2	33.28	16.64	5.39	<0.01

Panel B: Simple Effects

Test	prediction	t-stat	p-value
A: Effect of descriptive social norms for combination between department-based incentive system and firm-based information system	$\mu_{low} < \mu_{high}$	3.01	<0.01
B: Effect of descriptive social norms for combination between firm-based incentive system and department-based information system	$\mu_{low} < \mu_{high}$	4.09	<0.01
C: Effect of descriptive social norms for combination between firm-based incentive system and firm-based information system	$\mu_{low} = \mu_{high}$	0.36	0.77

FIGURE 1:

Expected Effects

Figure 1 shows the expected effects based on Hypothesis 1 and Hypothesis 2. Misaligned 1 refers to the combination of a department-based incentive system and a firm-based information system. Misaligned 2 refers to the combination of a firm-based incentive system and a department-based information system. Aligned refers to the combination of a firm-based incentive system and a firm-based information system. 'Low' refers to the conditions in which the descriptive social norms do not promote intra-firm cooperation and 'High' refers to the conditions in which the descriptive social norms promote intra-firm cooperation.

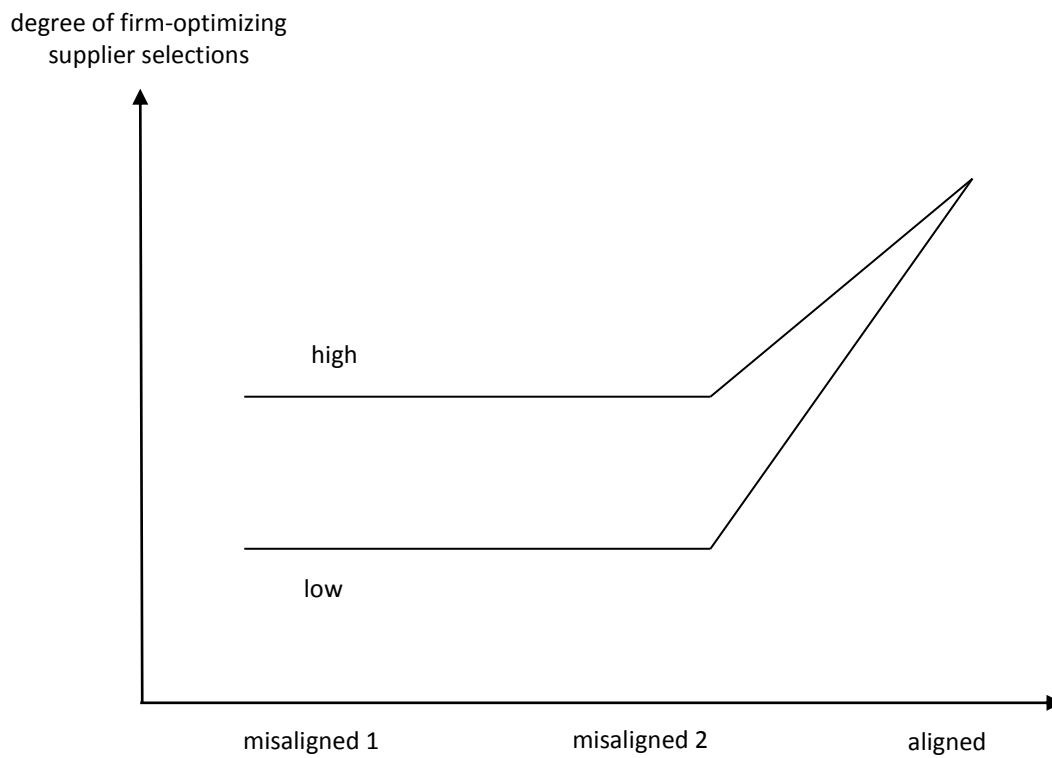


FIGURE 2:

Cumulative Quintile Distribution

Figure 2 shows the cumulative quintile distribution of the degree of firm-optimizing supplier selections for the 6 conditions. Misaligned 1 refers to the combination of a department-based incentive system and a firm-based information system. Misaligned 2 refers to the combination of a firm-based incentive system and a department-based information system. Aligned refers to the combination of a firm-based incentive system and a firm-based information system. 'Low' refers to the conditions in which the descriptive social norms do not promote intra-firm cooperation and 'High' refers to the conditions in which the descriptive social norms promote intra-firm cooperation.

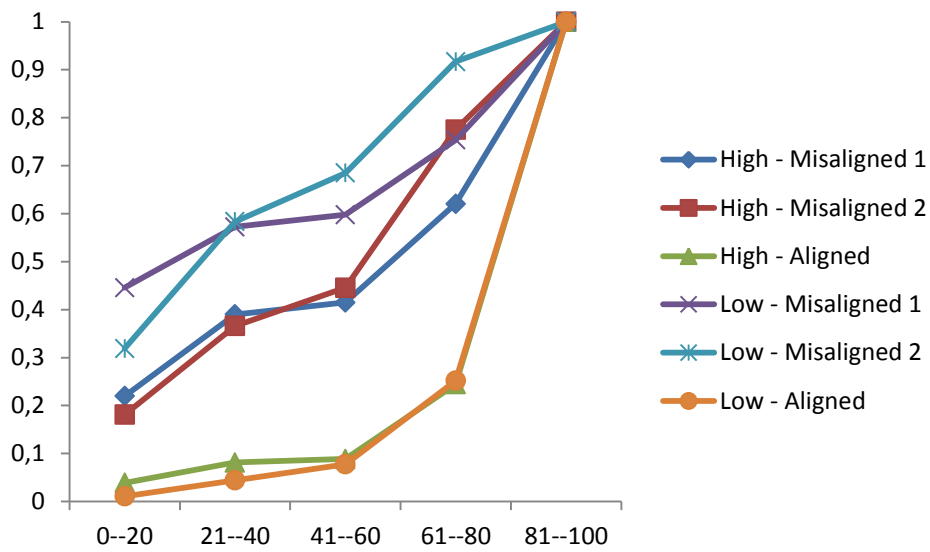


FIGURE 3:

Hypothesis 2: Degree of Firm-Optimizing Supplier Selections

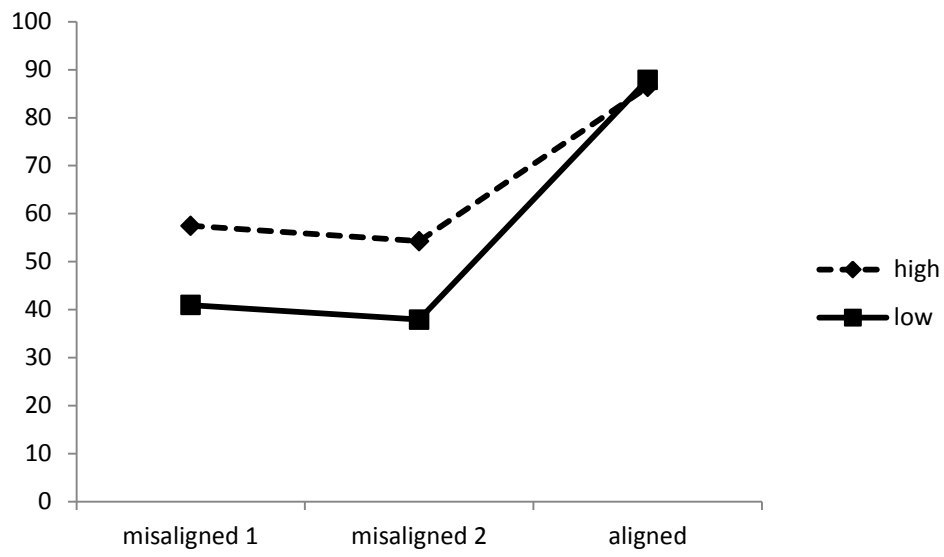
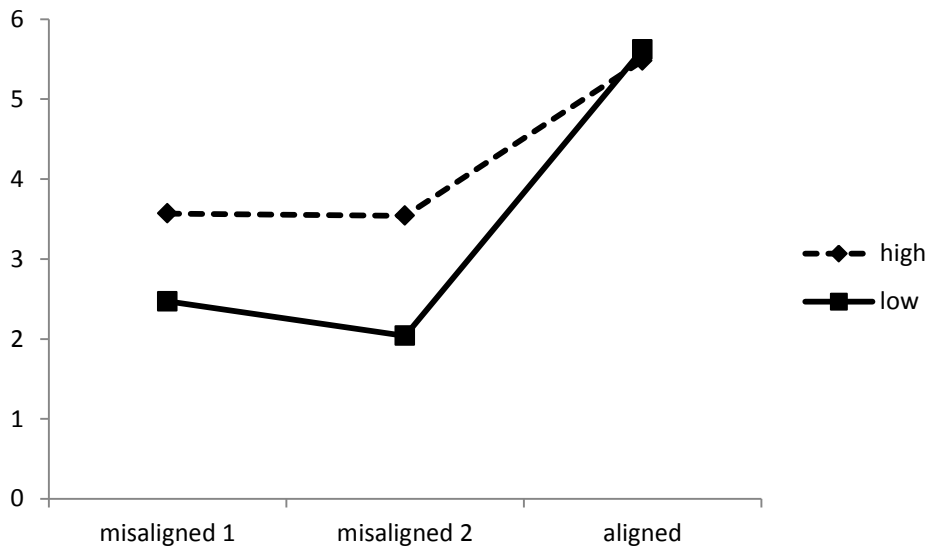


FIGURE 4:

Hypothesis 2: Number of Supplier Selections with a Purchase Intention Higher than 50



APPENDIX 1

Panel A: Information system

	Total cost information		Revenu-generating possibilities	
	Total cost	Change in total cost	Revenues	Change in revenues
Current supplier	60 000 EUR		70 000 EUR	
New supplier I	64 200 EUR	+ 4 200 EUR	77 200 EUR	+ 7 200 EUR
New supplier II	61 200 EUR	+ 1 200 EUR	71 800 EUR	+ 1 800 EUR

¹ Shaded areas are condition specific. In the conditions in which the information system should lead to the optimization of overall firm performance, subjects receive the information in the shaded areas. In the conditions in which the information system should lead to the optimization of departmental performance, subjects receive the information about revenue-generating possibilities as follows:

Revenu-generating possibilities			
	Supplier I	Supplier II	Current supplier
Durability	1	2	3
Strength	1	2	3
Maintenance	2	1	3

Panel B: Descriptive Social Norms

Low intra-firm cooperation	Informal element	High intra-firm cooperation
Purchasing and marketing are located in a different building.	Material artefacts	Purchasing and marketing are located in the same building.
2 times a year, there is a meeting to discuss problems. However, everyone considered the meetings as boring.	Coordination and Communication mechanisms	There is a weekly meeting to discuss problems and to search for solutions.
There are less informal contacts between the purchasing and marketing department.	Behavioral norms	There are a lot of informal contacts between the purchasing and marketing department.
Cross-functional collaboration is not the most important aspect in your firm. Everyone is convinced that a focus on the activities of the own department will lead to good results.	Values	Cross-functional collaboration is considered as fundamental to obtain good results.
Your firm is founded by 1 man who was convinced that specialization on the tasks of the own department is already difficult enough.	Fundamental assumptions	Your firm is founded by 2 brothers who have always collaborated and have stimulated cross-functional integrations.