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FACULTY OF BUSINESS ECONOMICS

Master of Management: Corporate Finance

Masterproef

Differences between E-negotiation and face-to-face negotiation by professional buyers: Analysis of role plays

Promotor :
Prof. dr. Gilbert SWINNEN

Supervisor :
De heer Wouter FAES

Negin Soroush

Master Thesis nominated to obtain the degree of Master of Management , specialization Corporate Finance

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Summary

In this research, we tried to find out the differences between face-to-face negotiation and E-negotiation. We have done so by examining hypotheses based on the existing literature on negotiations and communication, using a database on negotiations performed by professional buyers in training sessions. Part of the obtained results was based on a face-to-face setting, part of them on an e-mail negotiation setting. We have assessed the obtained results to find out the differences between face-to-face and E-negotiation. The results show that first of all the average time consumption in E-negotiations is shorter than average time spent in face-to-face negotiations. Second, the type of negotiation mode is not a determinant influencing the objectives of the negotiations as set by the negotiators. Third, the type of negotiation mode can be a determinant of the final result of the negotiations, but only to a limited extent. Mainly E-negotiations seem to have a large probability with regard to reaching a no deal situation. Moreover, E-negotiations seem to end in better results in more competitive situations than in less competitive situations as well. In addition, the probability of applying lower level competitive tactics in face-to-face negotiations is more likely than in E-negotiations. Moreover, our findings show that there is no large difference between E-negotiations and face-to-face negotiations in average number of used communication exchanges per time unit, although communication exchanges are relatively more frequent in face-to-face negotiations and tactics relatively more frequent in E-negotiations compared to one another. Finally, the open types of communication exchanges were observed more in face-to-face negotiations than in E-negotiations. These findings are statistically significant, but the observed relationships are weak in nature, therefore it is wise to be careful in interpreting and applying them. We call them tendencies rather than firm relationships. Due to the fact that the implementation of these findings may be dependent on some other criteria, not taken into account in our research (such as cultural differences, background of the observed negotiators, age and gender of the negotiators, and so forth) we should be very cautious when using them.

Preface

In recent years, there has been increasing interest in the difference between E-negotiations compared to face-to-face negotiations.

A lot of research has been performed on this subject already. The focus of the present study is the influence of the different negotiation modes (E-negotiations versus face-to-face negotiations) on a number of factors determining the negotiation as a phenomenon. Previous research often found contradictory evidence with regard to this subject.

Trying to help develop a comprehensive model of effective factors distinguishing E-negotiations from Face-to Face negotiations is the major objective of this study in order to help negotiators to enhance their probability of success in both negotiation situations.

Table of Contents

1. Introduction

In this chapter we try to situate the problem we want to investigate in this dissertation.

1.1. E-purchase as a prelude to E-negotiation

The word purchasing and procurement are sometimes used interchangeably. Although as Kalakota and Robinson (2000) point out, procurement generally has a broader meaning, we can assume both terms with almost the same meaning in this study.

Purchasing has not traditionally been a significant topic for management studies in comparison with other areas such as marketing, operations or strategy. At this moment, the importance of its impact on the final result of any company, the development of longer lasting relationships with suppliers in many markets, the fact-and figures approach more often advocated by buyers themselves and the liberation of many administrative tasks due to the improvement of technology and E-business have highlighted its importance as a strategic issue and improved its strategic position in many companies. The very fact that it can achieve considerable savings and other strategic benefits which have a direct impact on the companies' results and its offering of value to customers is certainly very important in this respect.

The potential importance of online procurement is highlighted by Christa Degnan, a senior analyst at the Aberdeen Group, who cites that purchased goods and services are often the largest expenditures at many companies.

"We estimate that for every dollar a company earns in revenue, 50 cents to 55 cents is spent on indirect goods and services such as office supplies and computer equipment. That half dollar represents an opportunity: By driving cost out of the purchasing process, companies can increase profit without having to sell more goods." (Hildebrand, 2002)

1.2 Problem Statement

Communication exchanges and tactics that are used during the negotiations are important points to be surveyed in order to help negotiators in enhancing their abilities and probabilities

of success in both E-negotiations and Face-to-face negotiations. There is a lot of scientific discussion going on about the differences between the face-to-face negotiation and E-negotiation mode, based on controversial and often conflicting research results. In this research we try to clarify whether differences can be observed in situations other than just student tests and games. We use a data base exploring differences between objectives, results and communication exchanges and tactics used by real life buyers during training sessions. Thus we emanate real life situations much better than any research before. In this study we thus intend to describe some these differences and want to have having a look at different influencing factors as well. The questions we want to try to answer more specifically are:

a. Basic research questions

I. Are there any major differences in the process of the E-negotiations compared to face-to-face negotiations?

II. Are there any major differences in the results of the E-negotiations compared to face-to-face negotiations?

III. What are these differences between e-negotiation and face-to-face negotiations?

b. Sub-questions

i. To what extent does the competitiveness of the situation influence the process of both types of negotiations?

ii. To what extent does the competitiveness of the situation influence the results of both types of negotiations?

iii. If differences are observed, do they influence mainly the process or the results of each of both types of negotiation modes?

iv. To what extent can all of these differences be turned into effective use in both e-negotiations and face-to-face negotiations?

2. Theoretical framework and literature review

To build the hypotheses for our study, we conducted a thorough research of the scientific articles published in the English language about differences observed between E-negotiations and face-to-face negotiations. We first limited ourselves to articles, books and chapters of the book that included “negotiations”, “conflict”, “differences” or “face-to-face” as a key search word in their title along with at least one of the following terms in the abstract: “technology”, “online”, “email” or “electronic communication”. In a second stage, we narrowed down our research of the existing literature by reviewing the articles and dismissing those sources that, although technically inclusive with respect to the search terms, were actually not relevant to the content of this study. At the same time, we expanded the theoretical component of our research by reviewing the literature in communication and negotiation studies and in organizational behavior on similar phenomena.

In this literature review, we will give a brief description of the most important research results found during this process. We will first describe the results with regard to the duration (or time spent on) of the negotiations, followed by sections on the objectives of the different types of negotiations (e-negotiations or face-to-face negotiations), the achieved results of those negotiations, the tactics used and the types of communication exchanges observed. These topics form the paragraphs of this subchapter. At the end of each paragraph we will formulate the hypotheses we want to test in our research venture.

A first snapshot of results in all those fields of research related to E-negotiations and face-to-face negotiations, indicates a great variety of conclusions and often leads to contradictory theories and outcomes.

2.1. Duration or time spent on the negotiation

First we consider how the duration of the negotiation might be influenced by the communication medium. We do not want to take into consideration the advantages of E-negotiation and E-mail in allowing information sharing without the loss of time that parties take in travelling and getting to see each other several times during a real negotiation. In that sense, of course E-negotiations always save time. Instead this paragraph tries to elaborate more about the time factor or duration of the negotiation itself.

Literature on this issue is contradictory. On the one hand there is some evidence that, generally speaking, E-negotiations take more time than face-to- face negotiations (Carnevale and Probst, 1997; Galin et al., 2004), while on the other hand other researchers suggest the opposite to be true (Sproull and Keisler, 1991; Carmel et al., 1993).

In their study, Carnevale and Probst (1997) state that E-negotiations will always take longer than face-to-face negotiations. They indicate that the distribution over time of the different steps in the E-mail communication process is the root cause for this. Galin et al. (2004) mention that face-to face negotiations are indeed preferable to E-negotiations in terms of duration due to the fact that the writing process which is included in writing and checking E-messages before their transmission demands more time than does the oral presentation in any face-to-face negotiation. Face-to-face negotiations are also less ambiguous, due to the existence of many non-verbal cues conveying the real contents of the oral message. Thus the mutual understanding of both parties in face-to-face negotiations is better and can moreover be checked by feedback sentences and questions. As a consequence the authors found that face-to-face negotiations need less time than E-negotiations (Galin et al., 2004).

Permitting aural and visual contact saves time and thus E-mail negotiations take more time (Purdy, Nye and Balakrishnan, 2000). When negotiators use face-to-face communication, there is indeed an immediate two-way flow of information, whereas in E-negotiations, communication is distributed over time and has an uncertain pace. A party sending an E-mail message to someone may receive a response within minutes, days, or even weeks, but does not have any clue as to what to expect. A long delay in responding to an E-mail message during a critical phase of relationship development, can express a powerful meaning about the status of the relationship (Lea and Spears, 1995). In contrast to this, in face-to-face mediations or negotiations, there is an expectation of some type of immediate response or reaction within a few seconds.

Another important factor which is different between E-negotiations and face-to-face negotiations is the time needed for preparation. In a study about negotiations on moral issues, internet negotiators needed less preparation time, showed little or no emotional behavior and didn’t consider interruption to be an option. They used paraphrases intensively and offered plenty of time for reflection. Thus, the negotiation took more time. Moreover, this effect also had the useful merit of giving negotiators an opportunity to change strategy

several times during the negotiation gaps in order to adjust to new arguments and elements in the bargaining process as well (Van Es, French and Stellmaszek, 2004).

In contrast to the above findings, other researchers suggest that E-negotiations are quick, direct and to the point and as a result of effect of the anonymity involved, help parties in separating the negotiated issues from the personalities involved (Carmel, Herniter and Nunamaker, 1993). It was also reported that E-mail discussions move at a more fast and deliberate pace (Sproull and Keisler, 1991), because the messages combine the information of a business letter with the immediate transmission of verbal communication. Taking into account these findings and considering length of business travel (inside or outside of a country or city) and crossing borders in international settings which can be an important reason for wasting time, these authors suggest that E-negotiations are a faster way for economic communication in the recent times.

Finally, some research studies describe differences between synchronous and asynchronous E-negotiations with regard to the duration of the negotiation. Asynchronous computer mediated communication or negotiation systems such as electronic mail (e-mail), discussion boards, and newsgroups, do not posses any real time feature in contrast to synchronous systems (such as chatting). Delays are usual when communicating via such an asynchronous system (Dietz-Uhler and Bishop-Clark 2001), whereas they do not occur in synchronous systems. This makes synchronous text-based communication richer compared to asynchronous computer mediated communication and faster. However, in contrast to face-to-face communication, synchronous as well as asynchronous electronic communication are both one-directional and intermittent (Friedman and Currall, 2003).

These studies point out that lack of time for thinking about proposals or requests during E-negotiations in contrast to face-to-face negotiations can be a reason for inappropriate responses, which can negatively affect the quality and result of the negotiation. The assumption is that in synchronous communication, time pressure and the necessity to react immediately, without the possibility to ask for feedback or react to immediate visually detectable reactions or to consider alternatives and analyzing the situation more deeply as a response are causes for spontaneous negative emotional reactions. Therefore, negotiators might use more competitive and offensive reactions. On the contrary, in asynchronous negotiation settings, emerging emotions can be reflected upon and the negotiator has more time to calm down and to consider consequences. Competitive disputes will thus be less

frequent in asynchronous settings (Pesendoerfer and Koeszegi, 2006). Negotiators might exchange more information, develop different alternatives and use problem solving behavior in this situation as they have more time to react as well (Fisher and Ury, 1981). This will be mentioned again when talking about the tactics and communication exchanges used (se paragraphs 2.4. and 2.5.).

Our negotiation setting was however very particular. First, our negotiation teams had time to prepare the negotiation before the process actually started and secondly, we set a time target to finish the negotiation, thus producing a time pressure effect and creating a great willingness to close the deal at best and as soon as possible. Although the E-negotiation method used was asynchronous, thus giving the negotiators time to reflect and cool down when things got more emotional, the direct clues involved in the face-to-face negotiations then become more important and are interpreted more deeply, as Pesendoerfer and Koeszegi (2006) indicate. We expect this to cause more reflection than in E-negotiation settings where the will to resolve the issue will be felt more strongly because of the lack of direct two-directional communication (Friedman and Curall, 2003). Thus our hypothesis reads as follows:

H1: The probability that E-negotiations take less time than face-to-face negotiation is high.

2.2. Objectives of the negotiations

What negotiators want to achieve in their negotiations is one of the most important factors which must be considered in this study. Yet, objectives of negotiators are seldom the topic of any research on negotiations. One reason might be that the goals of any bargaining activity are quite complex and related to a wide variety of factors such as price, quality, payment or deliverance terms and so forth. This makes quantifying the objectives of the negotiators a relatively complex issue. Previous literature about the goals of a negotiation in general moreover tries to link the objectives of the negotiation to the personality factors of the negotiator, such as background, age or gender (Morris, 2001; Stuhlmacher and Walters, 1998; Walters et. Al, 1999; Faes et al., 2010).

With respect to the difference between E-negotiations and face-to-face negotiations, studies dwell on the importance of the satisfaction obtained by the deal. Indeed, the satisfaction negotiators draw from any negotiation depends on how much they could achieve of their

objectives. Carnevale and Probst (1997) suggest that E-negotiations are less satisfactory, which can be interpreted as a less successful attempt to achieve the stated objectives of the E-negotiations. The reason for this is that in E-negotiations, participants are in vain looking for clues which can give them insight about the opponent's objectives and intentions (Moore et al., 1999). Another study also shows comparable objective economic gains between online and face-to-face negotiations. E-negotiators however have less confidence in the quality of their results and less overall satisfaction with the outcome than face-to-face negotiators (Naquin and Paulson, 2003).

We can consider the higher level of satisfaction in face-to-face negotiations compared to E-negotiations, but we found no evidence in the literature about differences in objectives between E-negotiations and face-to-face negotiations. Thus although objectives might be more readily achieved in face-to-face negotiations, we propose the following hypothesis:

H2: The probability that objectives of E-negotiations and face-to-face negotiations are different from one another is low.

2.3. Results of the negotiations

Outcomes of any negotiation are the vintage of the bargaining process. Outcomes refer to the extent to which negotiators are capable of obtaining satisfying results at the end of the negotiation. Research indicates that outcomes are closely related to the objectives the negotiators had set for themselves (Pruitt and Carnevale, 1993) . In our study we obtained different data for both of them and do not want to compare the outcomes with the intended objectives.

For assessing the results of a negotiation, the same factors addressed when studying the objectives (price, quality, payment or deliverance terms and so forth) have to be taken into account. Many studies exist which evaluate some of these factors separately as a subcategory of the outcome of a negotiation in general, without direct relation to our field of interest. Moreover when a combined result of these different factors is considered, studies are not always very clear in indicating what they consider to be the result of a negotiation.

There is conflicting evidence about the results of face-to-face negotiations compared to E-negotiations. Some authors indicate that the final result of face-to-face negotiations is better

than for E-negotiations, whereas others contend the opposite. Finally, there exist some other studies explaining that there is no significant difference between the results of the both types of negotiations and that the differences observed are more related to the process of the negotiation than to the final results.,.

Some studies mention that the results of face to face negotiations show better quality than the results of E-negotiations. E-negotiators are reported to have less success at obtaining interactive and mutual outcomes than face-to-face negotiators (Barefoot and Strickland, 1982). Furthermore lower judgment accuracy, poorer individual outcomes and less equal distribution of resources are also reported for computer guided communications and negotiations as compared to face-to-face negotiations (Arunachalam and Dilla, 1995; Rangaswamy and Shell, 1997).

Researchers in negotiation mediation found that face-to-face negotiations result more in mutually beneficial agreements most of the time, while written negotiations are much more likely to result in an impasse (Valley, Moag and Bazerman, 1996).

These studies also discuss about the reasons why this difference is observed. The main reason cited is that the absence of verbal or social cues in technically led negotiations and communications may result in misunderstandings and misinterpretations of the other party real positions and intentions and lead to unsatisfactory results or sometimes even conflict. These cues indeed normally help negotiators in transferring the real meaning of their communication more accurately and much better (Croson, 1999; Purdy, Nye and Balakrishnan, 2000). In addition to this, other studies suggest that information technology does not portray the reliability of the negotiators as they cannot be observed, which will have a negative effect on the achievement of integrative agreements (Morrris et. al, 2002; Naquin and Paulson, 2003). The nature of the arguments used is also influenced in E-negotiations (Loewenstein et al., 2005). E-negotiations do not permit multi-faceted and complex arguments easily. This leads negotiators to experience more difficulty in claiming more value. Thus E-negotiations will lead to less satisfactory results than face-to-face negotiations.

The main characteristic of E-negotiation which makes this kind of negotiation different from the more traditional version of face-to-face negotiations is thus its anonymous trait. This characteristic carries some advantages as well as disadvantages, which both can influence the final result of the negotiation. Griffith and Northcraf (1994) also show that anonymous

negotiators reach less integrative agreements than identified ones. E-negotiations thus will carry less mutually beneficial results.

Contrary to these studies, Pesendorfer and Koeszegi (2006) mention that in asynchronous computer guided negotiations, the biggest demerit of E-negotiations, namely the lack of the eye contact or social cues, also has positive effects. Their findings show that negotiators in this asynchronous mode are more satisfied with the process and outcomes of the negotiation compared to face-to-face negotiators. They believe that the communication mode itself can be a more important reason for the "de-individuation" of any negotiation than the ability of the media to transfer social cues. This reasoning is very close to the one finally held by some researchers believe that communication media do not have any effect on economic outcomes. But they do of course affect social behavior during the negotiation and the process of the negotiation itself only (Morris, 2001). Morris (2001) thinks that the ability of the negotiators and other factors such as age or gender play a larger role than the technicality of the communication process.

All this research is related to the mutual gains or interactive results obtained by the negotiators in the observed cases or games of negotiation or mediation. A related question is whether using technology – mediated negotiations can be an advantage for one side of the negotiation over the opponent only or how equally the benefit (or loss) in the achieved results is split between both parties involved. Croson (1999) found that E-negotiations resulted in more equal results than face-to-face negotiations, while other studies found no difference in the split of the outcome (Naquin and Paulson, 2003). McGinn and Keros (2002) are the only ones coming to the conclusion that face-to-face negotiations resulted in more equal outcomes than E-negotiations.

Given the confusion among researchers and the contradictory evidence, we want to play it on the safe side and believe that little difference will exist between the results of E-negotiations and face-to-face negotiations. Moreover, considering the nature of the discussion among those researchers and the fact that negotiators pay more attention to their individual final benefit, we assume that the media used during negotiations are more a kind of device that can differentiate in the negotiation process itself than in the ability of negotiators and their strategy to achieve results. Consequently the final results will be very similar indeed. Thus, the following hypothesis is tested:

H3: The probability that results of E-negotiations differ from the results of face-to-face negotiations is low.

The most prominent disadvantage of E-negotiations being its anonymity (Nadler, 2001; Nadler and Shestowsky, 2006) also leads to a certain lack of rapport and trust between the involved negotiating parties. Acquaintance is indeed a necessary prerequisite of trust (which is for instance achievable via chatting) between negotiation parties about unrelated subjects. One study shows that face-to-face negotiations often involved a significant proportion of the early bargaining time taken up in getting to know more about one another and talking about topics unrelated to the negotiation, thus setting a positive tone for the entire negotiation based on trust. This feature is very uncommon in written negotiations or E-negotiations. The parties involved in those negotiations find it difficult to establish a basis for trust. (Valleya, Moagb and Bazerman, 1996, Nadler, 2001; Nadler and Shestowsky, 2006). Whereas visual anonymity creates the same effect as spatial distance and easily prompts negotiators to exit from the negotiation table when things get tough (Hatta and Ken-ichi, 2007), acquaintance and trust, even when only superficial, may create positive feelings that can lead to more cooperative negotiations (Moore et al., 1999). E-negotiations do not, but even a brief telephone call has a positive effect and improves the probability of positive outcomes considerably (Moore et al., 2000).Such simple strategies make it possible to overcome the disadvantages of E-negotiations compared to face-to-face negotiations and decrease the risk of not reaching an agreement (Thomas-Hunt, Nadler and Thompson, 2000).

There is consequently a big correlation between the level of emotion and rapport with trust during the negotiation and with more positive emotions. In general, positive emotions will certainly lead to better results and also to less failure or breakdowns during the negotiation (Galin, Gross and Gosalker, 2004). This leads to the following hypothesis:

H4: The probability that E-negotiations end in not reaching a deal is larger than for face-to-face negotiations.

Some studies (Carnevale and Probst, 1997; Landry, 2000) finally show that face-to-face negotiations lead to better results in competitive and tense negotiation settings or situations, but not in cooperative ones. They assume that the absence of face-to-face contact as a disadvantage of E-negotiations enables people to communicate on a more equal status,

prevents hostility, overpasses suspicion and cuts across group boundaries, thus creating a better basis for agreement (Carnevale and Probst, 1997), specifically in those cases where these factors normally lead to more negative outcomes, namely competitive ones. Therefore, our last hypothesis with regard to the results of E-negotiations and face-to-face negotiations reads as follows:

H5: The probability that E-negotiations in more competitive situations lead to better outcomes is larger than in less competitive situations.

We end this section on research about the differences between E-negotiations and face-to-face negotiations with some research results which could not directly be related to the purpose of our study. Our aim is to be as complete as possible in reporting about previous research.

First, some studies combine the influence of the use of technical media in the negotiation process with other factors or variables when looking for differences in results with face-to-face negotiations. The most prominent variable in the actual literature is the gender of the negotiator and the gender combination present in the negotiation.. In general, gender does not seem to influence the results of negotiations very much (Stuhlmacher and Walters 1999; Walters et al. 1998). Yet other studies show that women seem to obtain better results than men do (Faes et al., 2010). This does not seem to be the fact in E-negotiations (Stuhlmacher, Citra and Willis, 2007). Swaab and Swaab (2008) have evaluated the quality of the negotiation process when considering both the technicity of the medium used and the gender of the negotiator. They mention that because direct communication (present in face-to-face negotiations) facilitates a shared understanding for two unfamiliar female negotiators, their agreements are of higher quality than when they do not have visual contact with one another. Moreover, if two female negotiators who do initially know each other have visual contact, their agreements are better than when they do not. For unfamiliar male negotiators, the result is inversed. This is due to the discomfort which is created by face-to-face communication, which is larger for male negotiators. Another study shows that two male negotiators develop less cooperative working relationships in E-negotiations than male E-negotiators who negotiate with female negotiators (Morris et al., 2000).

Second, Thomas-Hunt, Nadler and Thompson (2000) mention that negotiators who are concerned about the image of their group, use more aggressive strategies, leading to lower results, than negotiators more concerned about their personal fame. Thus the effect of team-working is another factor which must be considered when assessing the outcomes of negotiations.

Finally, we can read that outgroup negotiations have a more negative affect than ingroup negotiations when using E-based negotiation media. This seems to be related to the fact that outgroup negotiations are between people who have less developed a positive relationship than ingroup negotiators (Moore et al., 1999). This idea is supported by subsequent research by Kurtzberg, Dunn-Jensen and Matsibekker (2005) who found that the better the relationship between outgroup negotiating groups is, the more they are capable of developing appositive relationship. These authors indicate that this is much easier in a face-to-face setting than in E-negotiations.

2.4. Tactics used during the negotiation

In negotiation, there are many tactics that you may encounter or use yourself. They can be fair, foul or something in between, depending on the competitive or collaborative style the negotiators involved use and the seriousness of the outcomes. In general, negotiation literature consider tactics to be communication modes which want the other party to react in a specific way and thus have or produce a certain well intended effect. There is a wide array of tactics[1] such as silence, surprise, poker face, confusion, put yourself in my shoes and so forth. Some of them are social cues which can be only be applied effectively in face-to-face negotiation situation, whereas others are only possible in E-negotiations or both situations. In this paragraph we would like to review prior research studies and their results about differences in tactics used in face-to-face and E-negotiations.

Negotiation behavior is often illustrated in terms of different strategies (Pruitt and Carnevale, 1993). It is thought that the strategy of a negotiator can be predicted on the basis of his or her negotiation behavior, also by his or her counterpart. In this regard, reliability, predictability

[1] The description of the 35 tactics we structurally observed in our study is to be found in Annex 1.

and credibility of the negotiator are key factors to be considered. When looking at differences between face-to-face negotiations and E-negotiations several elements come into play here.

First, tactics can be changed several times during an E-negotiation. E-negotiators indeed regularly review previous statements and consequently, also review assumptions previously made as well as the relatively few observations. They could infer from the exchange of messages. Rereading previous statements indeed precludes the need to rehash objective facts. Thus, negotiators using the Internet may not have to be as well prepared as those negotiating face-to-face, since they have time gaps in between their messages to reflect on both past statements and possible future tactics. Evidence for this comment, derives from the fact from one study that early statements were reread seven times on average, while latter statements were reread four times on average (Van Es, French and Stellmaszek, 2004). A repeated change of strategy can thus be much more observed in E-negotiations than in face-to-face negotiations. Negotiators does look less reliable and predictable in a E-negotiation setting.

Second, Citera and Beauregard (1997) found that personality and negotiation behaviors correlated higher for E-negotiators than for face-to-face negotiators. In particular, individuals advocating deception more as a useful negotiation tactic, were also less credible in E-negotiations. No differences were found in face-to-face negotiation situations. The correlation between deceit and self-reported credibility was considerably different in E-negotiations than in face-to-face negotiations. Likewise the correlation between deceit and lying behavior was stronger in E-negotiations (Citera et al., 2005) Negotiators are thus more likely to act in accordance with their predispositions in E-negotiations, and less likely to fall back to their predispositions in face-to-face negotiations. This is consistent with social role theory, that the less likely it is to be identified as someone trying to cheat (E-negotiations), the less injunctive norms on what negotiators ought to do, exist.

Finally, the situation of face-to-face negotiations is completely different from E-negotiations in the sense that negotiators do not lack of social cues and eye contact. This leads to a better understanding of what the real issues, objectives and stances of the other party really are. On the contrary, in E-negotiations a larger ambiguity about these items will exist and remain throughout the negotiation (Hatta and Ken-Itchi, 2007). Moreover, and in E-negotiation situations the social cues that are present are less effective compared to face-to-face

negotiation situations as they are more difficult to interpret. Thus a larger ambiguity reigns in E-negotiation settings (Naquin and Paulson, 2003).

Unpredictability of the other parties actions, deception and the fear of being deceived as well as ambiguity are three important characteristics of E-negotiations. All these factors lead to a more strained situation, which will influence the behavior of the negotiators in the sense that they will become harder in their negotiation approach. This has been observed by several researchers indeed.

Galin, Gross and Grosalker cited that in face-to-face negotiations soft tactics are more frequently used than in E-negotiations, whereas hard tactics are more frequently used in E-negotiations than in face-to-face negotiations. Their research indicates that face-to-face negotiations enable a better flow of information and understanding between participants in negotiations and thus boost trust. This decreases the need to use of hard tactics and increases the use of soft tactics (2004). Similar results were reported by Giordano et al. (2007). According to this study, individuals negotiating via instant messaging are more likely to use forcing negotiating, experience more tension, and have lower deception detection accuracy than individuals negotiating face-to-face. Moreover, in E-negotiations the use of some competitive tactics such as threatening to withdraw from the negotiation or final and closed offers, are difficult to be read correctly by the opponent, who might see them as a direct way to close the bargaining or as an attempt at manipulative bullying (Morris, 2001). Morris et al. (2002) also mention that persuasion tactics, such as threats, have a considerably stronger negative impact on results in E-negotiations than in face-to-face negotiations. The use of final offers or ultimatums also seems to have a more negative impact in E-mail negotiations than in face-to-face negotiations. This interpretation of stances in E-negotiations in a more negative way is more prevalent in individualistic cultures (such as in the U.S.A. and some European countries) than in more collectivistic cultures (such as in Asia) (Graf, Pesendoerfer and Koeszegi, 2010).

As a consequence, E-negotiation tactics which are mostly harder than negotiation tactics in a face-to-face setting, also have the potential of being interpreted in a more offensive way. This will be translated in such a way that conflict during the negotiation is more probable (Morris et al., 2002) and that deals are reached which much more difficulty (Filzmoser and Vetchera, 2008). This research result led the authors to suggest some social lubrication like schmoozing or coordination in order to build a more friendly relationship, prior to or even

during an E-negotiation, which would lead to a mixed form of negotiations. In line with these findings, we propose the following hypothesis:

H6: The probability that negotiators will apply less competitive tactics in face-to-face negotiation is larger than in E-negotiations..

2.5. Communication exchanges occurring during the negotiation

Assessing the communication patterns expressed by the participants of negotiations, is one of the components of our study. The subdivision of communication exchanges used in this study is based of an article by Vine and West (1978) containing similar research. Communication patterns are a way of communicating without necessarily wanting to achieve a specific and intended answer by the other negotiator (in contrast to the tactics defined earlier). The communication exchanges identified in our research are: asking for proposals, closed offers, open offers, asking for clarification, giving clarification, counter-arguing, not agreeing, supporting and interrupting/not communicating. As we can see, some of them can only occur in face-to-face negotiations (interrupting) and some of them only in E-negotiations (not communicating). [2]

The communication exchanges used in E-negotiations and face-to-face negotiations differ from one another in terms of volume and type, as several previous research articles describe.

Morris (2001) cites that the total volume of communication is greater in face-to-face negotiations than in E-mail negotiations. This might be explained because eye contact exists in face-to-face situations and observing the social cues and gestures of the other party can be used in understanding and inversely in transferring a meaning in a short and decisive way. Moreover talking will be extensive and thus increase the extent of the communication as well.

[2] The communication exchanges used in the study by Vine and West (1978) are normally subdivided in open and closed communication exchanges. Asking for proposals, open offers, asking for clarification, giving clarification and supporting are all considered as open communication modes or exchanges by Vine and West. Counter-arguing, not agreeing, interrupting and not communicating are considered to be closed communication exchanges. Closed offers take an intermediate position. Mostly they are categorized as closed exchanges.

In face-to-face negotiations, participants are involved in some social cues like smiling, politeness rituals and nodding, which even when executed on a small level, will considerably enhance the relationship (Sproull et al., 1996). Each of these signs or gestures can confirm or reject an idea and may be helpful in transferring the correct meaning to the opponent. At the same time, a better relationship will also lead to more feedback to ensure that the correct meaning has been transferred to the other. Some studies show that negotiators who build positive rapport are less likely to create a situation that imperils the relationship (Morris et al., 2002). Therefore we can say that building communication based on rapport and schmooze guarantee that the negotiation process is safeguarded from useless debates or potential problems to a certain extent.

Finally, one study shows that a greater synchrony of nonverbal displays (as is the case in face-to-face negotiations), will lead anyone inside and outside the negotiation to judge that a high level of rapport is present in the interaction and more willingness present to resolve any problems leading to repeated feedback cues and communication (Bernieri, Davis and Rosenthal and Knee, 1994). A consequence of this extensive back and forth asking and clarifying is that the extent of the communication is quite large indeed. Opportunities or ways to do exactly the same in E-negotiations are less numerous (Morris et al., 2002).

This leads to the following hypothesis:

H7: The probability that the communication exchanges in face-to-face negotiations are more numerous than in E-negotiations is large.

Specialists believe that E-negotiations are generally harsher than face-to-face negotiations and can easily derail into misunderstandings and misjudgments. One study suggests that people are eight times more likely to become furious in e-discussions than in face-to-face discussions (Dubrovsky, Kiesler and Sethna, 1991).The major reason for this is that participants in E-communications pay more attention to the content of message and less attention to etiquette via e-mail. This is more true when the opponents did not have enough time to get to know each other and “schmooze” before starting the E-negotiation (Morris et. Al, 2002). This kind of reaction is thus more likely to increase when strangers communicate or negotiate with one another through E-mail as they do not possess enough common norms guiding the communication. On the other hand, E-negotiators who are part of a more

cohesive group, will show more conformity to communication norms necessary for problem solving activities (Postmes, Spears and Lea, 2000).

The most important consequence is that conflict aggravates more often and quickly in E-negotiation situations and this this process of conflict aggravation frequently serves as a roadblock to the process of mutual information exchange required for integrative results (Postmes et al., 2000). This leads to a different kind of harder and less open communication exchanges. Several studies exist that support this point.

One of advantages of E-negotiations compared to face-to-face negotiations is that the message can be sent whenever to the sender wants this to do, but here there is no guarantee that there is someone available to read this message instantaneously. This leads to a certain lack of synchrony in the communication which was cited amongst others by Thompson and Nadler (2002). This can cause even more ambiguity in E-negotiations, which can easily influence the quality of the negotiation process. In face-to-face communications both sides of the negotiation are involved in a more rapid process of correction of misinterpretations. This complexity of E-negotiations and communications compared to face-to-face communication leads to differences in types of communication exchange.

First, in e-mail communications multi-issue offers will be more frequent than in face-to-face negotiations (Tiedens et al., 1999). Related to this benefit of E-negotiations, their complexity also decreases the rate of asking clarifying questions as they are less needed, everything being already said in the offer one receives (Morris et al, 2000)..

Second, E-negotiators must also try more vigorously to interpret what the opponent has really said without having the opportunity for requesting clarification and interpreting answers. Evidence for this can be found with Morris et al. (2000). These authors mention that the amount of information which is exchanged during face-to-face negotiations is approximately three times as large as the amount of information exchanged in E-negotiations. Therefore generally interactions without physical presence carry less information and less social outcomes as well.

Third, revising and adjusting the subject of the debate during a negotiation requires some special opportunities such as asking for clarification, confirming or rejecting offers when the opponent anticipates getting more out of the bargaining. In face-to-face conversations, participants will more automatically turn to speaking so that they can develop a

conversational rhythm. This pattern of synchronous rhythm gives them a chance to precede their turn to speak, understand the other better, ask more for clarification, expressing responses to questions and offering alternatives. By contrast, in on-line communications, participants do not have the opportunity to involve in the same type of immediate clarifications and spontaneous reactions which they apply in face-to-face communications. On-line communicators tend to rely on longer, more complex messages without being interrupted by the other person (Morris et al., 2002), leading to a less open question and answer game during the negotiation.

Finally, emotions might disappear more quickly in on-line negotiations than in face-to-face negotiations because negotiators have more time to think and cool down. In an electronic setting, the person who made you so angry initially is not physically in front of you to make you even more aggressive. Instead they can try to apply another policy to reach their objectives, if and on condition they understand that the communication went horribly wrong before. It is therefore important in an on-line dispute resolution context to give people the opportunity to vent their frustrations and negative attributions. Very often this will be done by sending messages about not-agreeing, not talking to one another (and thus effectively interrupting the ongoing E-negotiation) or by sending a message involving an argumentation that counters the opponents' way of thinking. These closed communication forms will thus be more prevalent in E-negotiations than in face-to-face negotiations (Morris et al., 2002).

Considering the contents of this review about the types of communication exchanges in E-negotiations compared to face-to-face negotiations, we put forward the next hypothesis:

H8: The probability that the communication exchanges used in face-to-face negotiations are open is larger than in E-negotiations.

In our study all tactics were subdivided in classes of "competitiveness" as follows:

1. Low Competitive Tactics (Less than 5 in previous table)

2. Low Middle (Between 5 and 6)

3. High Middle (Between 6 and 7)

4. High Competitive (Over 7 in the previous table)

3. Methodological aspects

3.1. Research and sampling method

Most research in negotiation relies on game theory experiments. This has led some authors to state that very little is known about real negotiations, since real life cases are rarely used in this kind of research (Matz, 2004). On the other hand, observation of real life cases is very difficult as many companies or players do not like the details of these cases to be published for security reasons. Moreover, comparative results can only be obtained if real triangulation (Eisenhardt, 1989; Miles and Huberman, 1994) efforts are performed, hence involving the willing participation of both parties and of all participants in the process. In this way, it is made nearly impossible to obtain valid data.

We have tried to find a middle way between both types of research. Over a period of 18 years (from the end of 1988 until mid 2007) one of the researchers has systematically recorded the stated objectives, achieved results, used tactics and main communication exchanges in negotiation role plays during purchasing training sessions for buyers only. The required job experience was two to five years. All these negotiation courses were held in either Flanders or the Netherlands, thus limiting the possible effect of cultural differences on the observed facts, although the size and culture of the company in which the participants are employed also constitutes an element of difference, which our methodology did not assess. By observing these role plays, we were able to gather comparative data, as the same cases were played several times. Additionally, we could observe more real-life negotiation patterns by the players involved. We are well aware of the fact that observing role plays still constitutes an experiment from the methodological point of view. Furthermore, capturing human behaviour in role playing is difficult as people are usually fully aware that it is just a game. The pressure to score personal results, the moods of the day, the gender mix at the negotiating table all play a role in real life and cannot be reproduced by this experiment.

In general, 1159 games of 11 different negotiation role plays were by over 3000 players. One can never exclude exceptions, but because the organisational position of the participants in the games was equal and their job experience comparable, we believe that the power position of the observed people did not significantly differ. Role plays were rotated randomly in over the different training sessions. All of the 11 games were thus played at the beginning

as well as somewhere in the middle and sometimes at the end of a training session. In all sessions five games were played. The procedure of collecting the data was amply described by Faes et al. (2010). We refer to the most important facts here.

Each of the games was either videotaped or audio recorded. When videotaping occurred, the trainees who did not participate in the game were sitting in an adjacent room watching the role play on a screen. When the game was audio recorded, the not negotiating participants were at least six meters away from the negotiating table in an area from which it was impossible for the negotiators to see them. In this way we wanted to exclude interference from the non-negotiators on the games themselves. The results of the games, however, were systematically coded by the trainer, together with all the participants of the training session.

Moreover, we have deliberately not observed the activities of the dyad at play, but only those initiated by the purchasing side. The main reason for this choice was that the participants of the training sessions were buyers only. As such, the sellers' role was not their natural way of behaving. We feared that observing a dyadic pattern was thus not as reliable as it should have been for further analysis.

3.2. Data collection and coding process

The following procedure for collecting the data was used consistently. Each of the playing groups was asked to indicate whether the game was regarded as competitive in nature (on a 7 point scale) and which were the objectives in terms of total cost calculation. For each of the separate games the average competitiveness was also calculated (see annex 1) and the different games were thus subdivided into three categories: high competitiveness games, medium competitiveness games and low competitiveness games.

The game objectives and results were calculated over all identical case situations (and not by comparing results with objectives on an individual case basis) using normal distribution parameters when calculating the total cost objectives and results (average and standard deviation). These two variables (objectives and results) therefore result in five different subcategories: high level (results, objectives), high medium level, medium level, low medium

level and low level. An extra “no deal” category was added to “results”, as some games ended in failure. The subdivision in categories is indicated in the table below.

Subdivision of results/objectives	
High	> mean + 2ó
Medium High	≥ mean + 1ó and ≤ mean + 2ó
Medium	≥ mean + 1ó and ≥ mean - 1ó
Medium Low	≥ mean - 1ó and ≥ mean - 2ó
Low	< mean - 2ó
No deal	Negotiation ended in failure, no result.

For each game, the communication pattern was coded at “key moments” during the negotiation. Leary (2004) defines them as: “Events and exchanges that are “critical” are distinguished from more usual ways of working in that they carry urgency. They are turning points.” Morris and Wheeler (2001) state: “Critical moments in negotiation are occasions of interactive engagement and intense emotional experiencing in which the negotiation takes a different turn.” Druckman (2001) indicates that these moments can only be identified by retrospective analysis, a method we applied. The identification took place with the help of the participants after completion of the game. At the same moment the tactics and the communication exchanges used were also coded. This coding was based on a list of tactics and communication patterns (closed offers, open offers, asking proposals, asking clarification, clarifying, counter-arguing, disagreeing, supporting and interrupting) used in many negotiation training sessions and defined by Vine and West (1978). They were carefully written down on the short transcript of the played game so as to indicate timing and sequence correctly. In total, 3421 tactics and 5807 communication exchanges were coded in this way.

To overcome the main criticism about “qualitative” research, namely the lack of methodological rigor (Yeung, 1995) and the presence of subjectivity, we crosschecked the coding carried out by the participants with a coding performed later by a multiple background panel. This second coding constituted a kind of data source triangulation (Yeung, 1995), increasing the objectivity of the interpretation. Our second panel of experts consisted of two communication experts, a negotiation practitioner who did not participate in the game itself, a trained psychologist and a news journalist. Over the 18 years of observation the panel remained unchanged. The time lapse between the first coding (the training session) and the second coding was six weeks on average as our second panel met on a quarterly basis. This choice was deliberate, because the data were still fresh in mind. The second coding was obtained in a two-step process. First, each member of the panel coded the key events separately, then a comparison of the individual coding was made and a joint decision reached by the panel after discussion. This final coding was compared to the initial coding during the training session. If both coding were not identical (which occurred in 6,7 % of all cases), the coding of our panel of experts was used in our analysis.

3.3. Methodology used in subdividing the stages of the negotiations

Researchers do not agree however on the way in which to subdivide negotiations in different stages (Zaheer et al., 1999). Two methods have been used so far: the *‘event-driven*” and the “*interval-driven*” approach. The *“contents-driven” or “events-driven”* method looks at clusters of similar behaviours within a dyad and marks a transition when one cluster ends and another begins (Holmes 1992, Putnam and Jones 1982b) or looks at group decision paths and subsequent group processes (Poole and Roth 1989a, b; Olekalns et al. 2004). In contrast, researchers using the “*interval approach*“ rely on theory to identify the number of stages and transition points a priori and then test whether the content of these intervals fits their theory (Arrow et al., 2004).

The strength of the event-driven approach is that it captures both similarities and differences between groups. The three-stage negotiation model of problem initiation, problem solving,

and problem resolution was developed using an event-driven approach. Its limitation is its inability to test general models as theoretically the negotiation can be divided into many phases based on content, and phases can repeat themselves. Each negotiation has its own unique progression of phases. The only way a general model can be built is if content phases evolve similarly across many different negotiations. The very nature of the event-driven approach, which inextricably links phase and content, makes it difficult to identify general phases across negotiations or to test for differences in between-group processes. The interval approach typically uses time or number of speaking turns as the unit to divide a sequence of events or a negotiation process into equal stages, it is more capable of separating stage and content (Adair et. al., 2001). The approach thus takes into account negotiations of different length; first quarters of interactions are first quarters regardless of the how long the interactions take. The interval approach is also powerful in testing between-group differences because it allows comparison within and across comparable stages (Adair and Brett, 2003).

For our analysis it was important to test the differences between games and groups of games, thus the interval method provided us with the best of both alternatives. Since most of our games lasted between 50 and 70 minutes, a pragmatic approach was taken: each game was subdivided in four quarters of 15 minutes, the last period being of unequal length according to the total time elapsed between start and end of the negotiation game.

3.4. Statistical methods used

Most of the thus obtained data are summarized in cross-tabulations between a number of variables observed during the games, such as the competitiveness of the case situation as identified by the participants, their stated objectives and obtained results and the coded events. The data collected from the survey were analysed using SPSS. The significance level (α) for the main statistical tests was set at .05. A more stringent significance level (α = .01) was used to protect against inflating the Type 1 error rate. The categorical data were analysed using a variety of non-parametric tests:

- Chi-square ($\chi 2$) tests were used to test for the independence of categorical variables.

- The strength of association between categorical variables was measured using either the phi (φ) coefficient (for 2 × 2 tables) or Cramer's V coefficient (for tables larger than 2 × 2).
- Other non-parametric methods, such as Somers'd (for ordinal by ordinal data), were used to analyse whether a dependency relationship exists. The "gender" categorization was used as the dependent variable.
- In order to better understand what the relationship between variables looks like, analyses were undertaken within each variable using an adjusted standardised residual statistic (ASR). The ASR indicates the relative difference between the observed and expected frequencies for a particular cell, adjusted for row and column totals, and divided by an estimate of their standard deviation. This statistic can be used to identify those cells with observed frequencies significantly higher or lower than expected. Adjusted standardized residuals are approximately normally distributed with a mean of 0 and a standard deviation of 1, and can be interpreted as z-scores (Haberman, 1978).

We also used correspondence analysis to analyse the data on the communication modes more deeply. Correspondence analysis is a multivariate method for exploring cross-tabular data by converting such tables into graphical displays or maps where row and column characteristics are represented (Greenacre, M., 1993; Hair, Black, Babin, Anderson and Tatham, 2006). The method consists in finding coordinates of row and column attributes in such a way that the association between them is visualised as well as possible. The total amount of association is measured by using inertia, which is derived from the Chi square statistic (inertia = χ^2 / n).

One of the applications of correspondence analysis consists of investigating a sequence of events, where events take place in discrete time domains. According to Thiessen, Rohlinger and Blasius (1994) the approach is well applicable to topics such as changes in opinions, orientations, attitudes, values and beliefs. They applied the method to study changes in the division of household tasks between men and women, during the first two years of their marriage, using trend data (panel data).

In this study, we will use correspondence analysis to summarize and visualize changes in the type of communication exchange over negotiation time. Annex 2 served as input for the correspondence analyses using SPSS. When using symmetric maps produced by such an analysis, distances between row and column points should not be directly interpreted. It is permissible, however, to compare the relative positions between the variables and the principal axes, i.e. one can use the cosines of the angles between the variables and the axes (Blasius, 1994).

4. Results and findings

4.1. Data Analyses

The data collected from the survey were analysed using the Statistical Package for the Social Sciences (SPSS) 18.0.2. The main statistical testes level was assumed at 0.05. The categorical data were analysed using a variety of non-parametric tests via cross tabulation.

The statistical significance of the observed association is often measured by the Chi-square statistic. The strength of association, or degree of association, is important from a practical or substantive perspective. (Malhotra and Birks, 2006).

The strength of the association can be measured by the phi correlation coefficient, the contingency coefficient, Cramer's V and the Lambda coefficient which are illustrated in the tables of this section.

4.1.1. Cross tabulation:

A cross tabulation is a joint frequency distribution of cases based on two or more categorical variables. Displaying a distribution of cases by their values on two or more variables is known as contingency table analysis and is one of the more commonly used analytic methods in the social sciences. The joint frequency distribution can be analyzed with the chi-square statistic (χ^2) to determine whether the variables are statistically independent or if they are associated. If a dependency between variables does exist, then other indicators of association, such as Cramer's V, gamma, Sommer's d, and so forth, can be used to describe the degree which the values of one variable predict or vary with those of the other variable.[3]

- Pearson's chi-square test

  The chi-square test statistic can be used to evaluate whether there is an association between the rows and columns in a contingency table. It assists us in determining whether a systematic association exists between the two variables. The null hypothesis, H_0, is that there is no association between the variables (Malhotra and Birks, 2006)

  The chi-square test statistic is designed to test the null hypothesis. This statistic is calculated by first obtaining for each cell in the table, the expected number of events that will occur if the null hypothesis is true. When the observed number of events deviates significantly from the

[3] http://www.indiana.edu/~educy520/sec5982/week_12/chi_sq_summary011020.pdf

expected counts, then it is unlikely that the null hypothesis is true, and it is likely that there is a row-column association. Conversely, a small chi-square value indicates that the observed values are similar to the expected values leading us to conclude that the null hypothesis is plausible. Therefore Chi-square ($\chi 2$) tests were used to test for the independence of categorical variables.

- Phi (φ) & Cramer's V coefficient

  The phi (φ) coefficient is applied as a measure of strength of association for special case of a table with two rows and two columns or Cramer's V coefficient for tables greater than 2 × 2(Malhotra and Birks, 2006). The values range from 0 (no association) to 1.

- Lambda

  This tests the strength of association of the cross tabulations when the variables are measured at the nominal level. The values range from 0 (no association) to 1. When we use lambda coefficient, we assume that the variables are measured on a nominal scale (Malhotra and Birks, 2006).

- Somer's d:

  Somer's d is a measure of association for ordinal data that compensates for "tied" ranks and adjusts for direction of the independent variable. It is an asymmetric measure of association between two variables, which plays a central role as a parameter behind rank or "non–parametric" statistical methods. Somer's d usually measures an association between a predictor variable *X* and an outcome variable *Y*. The values range from -1 (zero means no association) to +1. Therefore how much the value of Sommer's d is more closed to zero it shows less correlation between variables.

  Adjusted standardised residual:

- In order to understand how the relationship between variables looks like, analyses were applied using an adjusted standardised residual statistic (*ASR*) for each variable. The ASR indicates the relative difference between the observed and expected frequencies for a particular cell. The adjusted residual takes into account the overall size of the sample and gives a fairer indication of how far off the observed count is from the expected count. This statistic can be used to identify those cells with observed frequencies significantly higher or

lower than expected. Adjusted standardized residuals are approximately distributed with a mean of 0 and a standard deviation of 1. If the value is greater than 1 .96 or less than -1.96, we can assume that the number of cases in the cell is significantly different from the expected value, and that there is an unusually strong relationship between the two cross-classified variables.

4.1.2. Statistical Error:

The notion of statistical error is an integral part of hypothesis testing. The test requires an unambiguous statement of a null hypothesis, which usually corresponds to a default "state of nature", for example "this person is smoker" or "this man is not guilty". An alternative hypothesis is the denial of null hypothesis, for example, "this person is not smoker" or "this man is guilty" .What we actually call type I or type II error depends directly on null hypothesis. The negation of the null hypothesis causes type I and type II errors to switch places. The goal of the test is to determine, if the null hypothesis can be rejected.

The result of the test may be negative, relative to null hypothesis (not smoker and guilty) or positive (smoker and not guilty). If the result of the test corresponds with reality, then a correct decision has been made. However, if the result of the test does not correspond with reality, then an error has occurred.

Type I error, also known as an error of the first kind, an α error or a false positive is the error of rejecting a true null hypothesis (H_0). An example of this would be if a test shows that a boy is sick (H_0: he is not) when in reality he is not.

In summary, first of all the null hypothesis should be tested by chi-square testing in order to accept or reject the hypothesis. If the null hypothesis is rejected, this means that there is a correlation and then the strength of this association must be determined using an appropriate statistic like the Phi coefficient, Cramer's V, gamma, Somer's d, and so forth.

4.2. Findings

In this part we are intended to explain our findings about examining the hypotheses. These results show some differences between two types of negotiations by examining different factors which are mentioned as below.

4.2.1. Influence of types of negotiation on the time duration of the negotiations

We have tested H1 by comparing the duration of the cases in both types of negotiations with one another.

Table 1: Average duration of the negotiations in our sample expressed in minutes

Average duration in minutes	More Competitive Case	Less Competitive Case
FtF	41	51
Eneg	23	32
Percentage Eneg/FtF	56,10%	62,75%

According to our raw data, the average duration of time spent on E-negotiations in our sample is 23 minutes in more competitive role plays and 32 minutes in less competitive role plays. This is considerably shorter than the average duration of the face-to-face negotiations in the equivalent role plays (respectively 41 and 51 minutes). These results can be considered as a verification of H1, which stated that E-negotiations take less time than face-to-face negotiations.

4.2.2. Influence on the objectives

In order to examine hypothesis 2, we have tested the cross tabulations of the objectives of the different negotiations with the type of the negotiation. This was done in Tables 2a, 2b and 2c.

Table 2a: Cross tabulation for 'Level of Objectives' versus 'Type of Negotiation' – total number of cases *(*)*

Objectives		High	High Middle	Middle	Low Middle	Low	*TOTAL*	
Types of Negotiation	FtF	37 12,6% (-1.2)	62 21,2% (-0.9)	108 36,9% (-0.3)	55 18,8% (1.4)	31 10,6% (1.6)	*293* *100%*	Pearson $\div^2$ = 5.782 (sign.=0.216)
	ENeg	25 16,9% (1.2)	37 25% (0.9)	57 38,5% (0.3)	20 13,5% (-1.4)	9 6,1% (-1.6)	*148* *100%*	Cramer's V= 0.115 (sign.=0.216) Lambda = 0.000
	TOTAL	*62* *14,1%*	*99* *22,4%*	*165* *37,4%*	*75* *17%*	*40* *9,1%*	*441*	Somers' d= -0.096 (sign. = 0.019)

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals.

Table 2b: Cross tabulation for 'Level of Objectives' versus 'Type of Negotiation' – number of high competitive cases *(*)*

Objectives		High	High Middle	Middle	Low Middle	Low	*TOTAL*	
Type of Negotiation	FtF	32 20,4% (-0.9)	48 30,6% (-0.6)	60 38,2% (0.2)	15 9,6% (1.6)	2 1,3% (1.0)	*157* *100%*	Pearson $\div^2$ = 4.449 (sign.=0.349) Cramer's V= 0.136 (sign.=0.349) Lambda = 0.000 Somers' d= -0.096 (sign. = 0.092)
	ENeg	21 25,6% (0.9)	28 34,1% (-0.6)	30 36,6% (-0.2)	3 3,7% (1.6)	0 0% (-1.0)	*82* *100%*	
	TOTAL	*53* *22,2%*	*76* *31,8%*	*90* *37,7%*	*18* *7,5%*	*2* *0,8%*	*239*	

(*) % refers to row percentage, numbers between brackets are standardized adjusted residual

Table 2c: Cross tabulation for 'Level of Objectives' versus 'Type of Negotiation' – number of low competitive cases *(*)*

Objectives		High	High Middle	Middle	Low Middle	Low	*TOTAL*	
Type of Negotiation	FtF	5 3,7% (-0.8)	14 10,3% (0.7)	48 35,3% (-0,8)	40 29,4% (0.5)	29 21,3% (1.3)	*157* *100%*	Pearson $\div^2$ = 2.986 (sign.=0.560)
	ENeg	4 6,1% (0.8)	9 13,6% (-0.7)	27 40,9% (0.8)	17 25,8% (-0,5)	9 13,6% (-1.3)	*82* *100%*	Cramer's V= 0.122 (sign.=0.560) Lambda = 0.000
	TOTAL	*9* *4,5%*	*23* *11,4%*	*75* *37,1%*	*57* *28,2%*	*38* *19,8%*	*202*	Somers' d= -0.106 (sign. = 0.083)

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals.

The results for statistical tests in tables 2a through to 2c indicate that there is a no significant relationship between the different level of objectives and the negotiation types in general, in more competitive situations and in less competitive situations. As the outputs show the Pearson correlation significance is respectively 0.216; 0.349 and 0.560. These are all larger than 0.05. The P-values of Cramer's V and Somer's d are also larger than 0.05 and confirm these results. None of the adjusted standardised residuals is higher than 1.96 or lower than -1.96 in either of the situations (in total, low competitive cases and high competitive cases) again confirming the results. Thus H2 is confirmed. In other words, whether the negotiation is conducted via e-mail or face-to-face does not have any significant influence on the objectives

the negotiators set themselves. Probably the situation itself is more predominant than the way in which the negotiation is conducted when negotiators determine where they want to head for in terms of results.

4.2.3. Influence of the negotiation mode on the results obtained by the negotiators

The influence is tested by statistically analyzing the cross tabulations in Tables 3a, 3b and 3c.

Table 3a: Cross tabulation for 'Results' versus 'Type of Negotiation' - total number of cases(*)

Results		High	High Middle	Middle	Low Middle	Low	No Deal	*TOTAL*	
Type of Neg.	FtF	16 5,5% (-0.8)	77 26,3% (-0.5)	116 39,6% (1.2)	40 13,7% (1.9)	7 2,4% (1.3)	37 7% (-2.6)	*293* *100%*	Pearson÷^{2}= 12.338 (sign.=0.030)
	ENeg	11 7,4% (0.8)	42 28,4% (0.5)	50 30,1% (1.2)	11 7,4% (-1.9)	1 0,7% (-1.3)	33 22,3% (2.6)	*148* *100%*	Cramer's V= 0.167 (sign.=0.030) Lambda = 0.000
	TOTAL	*27* *6,1%*	*119* *27,0%*	*166* *37,6%*	*51* *11,6%*	*8* *1.8%*	*70* *15,9%*	*441*	Somers' d= 0.003 (sign. = 0.953)

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

Table 3b: Cross tabulation for 'Results' versus 'Type of Negotiation' - number of more competitive cases *(*)*

Results		High	High Middle	Middle	Low Middle	Low	No Deal	*TOTAL*	
Type of Neg.	FtF	15 9,6% (-0.6)	46 29,3% (-0.2)	38 24,2% (1.0)	22 14,0% (1.2)	3 1,9% (0.4)	33 21% (-1.4)	*157* *100%*	Pearson÷^{2}= 4.256 (sign.=0.513)
	ENeg	10 12,2% (0.6)	25 30,5% (0.2)	15 18,3% (-1.0)	7 8,5% (-1.2)	1 1,2% (-0.4)	24 29,3% (1.4)	*82* *100%*	Cramer's V= 0.133 (sign.=0.513) Lambda = 0.000
	TOTAL	*25* *10,5%*	*71* *29,7%*	*53* *22,2%*	*29* *12,1%*	*4* *1,7%*	*57* *23,8%*	*239*	Somers' d= 0.006 (sign. = 0.918)

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

Table 3c: Cross tabulation for 'Results' versus 'Type of Negotiation' - number of less competitive cases *(*)*

Results		High	High Middle	Middle	Low Middle	Low	No Deal	*TOTAL*	
Type of Neg.	FtF	1 0,7% (-0.5)	31 22,8% (-0.5)	78 57,4% (0.6)	18 13,2% (1.5)	4 2,9% (1.4)	4 2,9% (-2.9)	*136* *100%*	Pearson÷^{2}=12.525 (sign.=0028) Cramer's V= 0.249 (sign.=0.028) Lambda = 0.000 Somers' d= -0.007 (sign. = 0.912)
	ENeg	1 7,4% (0.5)	17 29,1% (0.5)	35 53% (-0.6)	4 6,1% (-1.5)	0 0% (-1.4)	9 13,6% (2.9)	*66* *100%*	
	TOTAL	*2* *1,0%*	*48* *23,8%*	*113* *55,9%*	*22* *10,9%*	*4* *2%*	*13* *6,4%*	*202*	

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

The type of negotiation conducted does seem to have some influence on the results obtained by the negotiators. The statistical tests in tables 2a indicate that the results and the type of negotiation are statistically related to one another (for the total number of cases observed). Pearson correlation is indeed significant at 0.030, which is lower than 0.05. Since Craver's V and Lambda are both low, the relationship is weak. The relationship moreover is monotone as Somers' d is positive. From the ASR one can conclude that the statistical relevance is mainly due to the differences observed on the level of low middle results (which are more probable for FtF negotiations as the ASR is positive in the above row) and no deals (which are more probable for the ENeg situations as the ASR is positive in the below row of table 2a). Thus H3, which supposed there was no relationship between the obtained results and the type of negotiation is partially disconfirmed.

The statistical tests in the cross tabulations presented in Tables 2b and 2c, indicate that the relationship between the results obtained and the negotiation mode is somewhat different in low and high competitive cases, however table 2b indicated no significant relationship for high competitive cases (Paerson correlation is 0.513) compared to the existence of a significant relationship in low competitive cases (the Pearson correlation in table 2c is 0.028, which is lower than 0.05). So the partial disconfirmation of H3 is due to the observations made for the low competitive cases only. The analysis of the ASR in Table 2c confirms that the significance is due to the observations of the no deal.

It is therefore very interesting that we try to observe whether H4 can be confirmed or not (see Table 4).

Table 4 indicates that indeed there is a statistically significant relationship between success or failure and the type of negotiation engaged in (Pearson correlation α = 0.009, which is lower than 0.05). The sign of the ASR indicates that the probability of not closing a deal in cases of E-Negotiations is higher than in Face-to-Face negotiations. Thus H4 is confirmed.

Table 4: Cross tabulation of 'Deal/No Deal' versus 'Type of Negotiation' – total number of cases *(*)*

		DEAL	NO DEAL	*TOTAL*	
Type of Negotiation	FtF	256 87.4% (2.6)	37 12.6% (-2.6)	*293* *100%*	Pearson $\div^2$ = 6.885 (sign.=0.009) Cramer's Phi = 0.125 (sign.= 0.009) Lambda = 0.000
	ENeg	115 77,7% (-2.6)	33 22,3% (2.6)	*148* *100%*	
	TOTAL	*371* *84,1%*	*70* *15,9%*	*441*	

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals.

To analyse whether H5 (The probability that E-negotiations in more competitive situations lead to better outcomes is larger than in less competitive situations) is true or false, we constructed Table 5.

Table 5 Cross tabulation of “Results of E-Negotiations” with “low and high competitive cases”

Results		High	High Middle	Middle	Low Middle	Low	*TOTAL*	
Type of case.	More competitive case	10 17,2% (2.8)	25 43,1% (1.5)	15 25,9% (-3.8)	7 12,1% (0.9)	1 1,7% (1.0)	*58* *100%*	Pearson $\div^2$ = 18.698 (sign.=0.001)
	Less competitive case	1 1,8% (2,8)	17 29,8% (-1.5)	35 61,4% (3.8)	4 7,0% (-0.9)	0 0,0% (-1.0)	*57* *100%*	Cramer’s V= 0.403 (sign.=0.001) Lambda = 0.246
	TOTAL	*11* *9,6%*	*42* *36,5%*	*50* *43,5%*	*11* *,9,6%*	*1* *0,9%*	*115*	Somers‘ d= -0.228 (sign. = 0.008)

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals.

The results in Table 5 indicate that there is a significant relationship between the type of situation (more or less competitive) and the results of the E-Negotiations. The Pearson correlation is significant at 0.001. Moreover, Cramer’s V is large enough to indicate a strong relationship. This is confirmed by the value of Lambda and the significance of Somers’d (alpha = 0.008). It is not a

monotone relationship however as Somers'd is negative. The ASR indicate that the relationship is due to the fact that the probability of reaching a high deal is larger in more competitive cases, whereas the probability of middle level results is lower in a more competitive situation. Since also the high middle results are somewhat more probable in more competitive situations than in less competitive situations, H5 is certainly partially supported by our data.

4.2.4. Influence of the negotiation mode on the type of events during the negotiation (tactics or communication exchanges).

Table 6 gives an overview of the ratios of the different events during the negotiation games and compares them with the average duration of the games.

Table 6: Characteristic ratios for the types of events in both types of negotiations.

	Tactics	Comm. Exch.	Tactics/ case	Comm. Exch/case	Tactics/ Comm. Exch.	Average Time	Tactics/ Minute	Comm Exch/ Minute
FtF	832	1856	2,84	6,33	0,45	45,6416	0,062215	0,138787
Eneg	303	523	2,05	3,53	0,58	27,0135	0,075788	0,130815
Total	1135	2379	2,57	5,39	0,48			

In general, one can conclude that although the number of events is considerably lower in the E-Negotiation mode compared to the Face-to-face negotiation mode, the difference is practically not existent if you take the average duration of the games into consideration. Although not being a scientific proof, it is certainly not an indication that H7 (Communication exchanges are more numerous in face-to-face negotiations) can be accepted. Relatively speaking this does not seem to be the case. Yet there might be a statistically relevant relationship between the occurrence of the different types of events and the negotiation mode. This is tested in Tables 7a, 7b and 7c.

Table 7a: Cross tabulation for 'Type of Event' versus 'Type of Negotiation" – total number of cases *(*)*

		TACTICS	COMM. EXCH.	*TOTAL*	
Type of Negotiation	FtF	832 31% (-3.1)	1856 69% (3.1)	*2688* *100%*	Pearson $\div^2$ = 9.488 (sign.= 0.002)
	ENeg	303 36,7% (3.1)	523 63,3% (-3.1)	*826* *100%*	Cramer's Phi = -0.052 (sign.= 0.002)
	TOTAL	*1135* *32,2%*	*2379* *67,7%*	*3514*	Lambda = 0.000

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

Table 7b: Cross tabulation for 'Type of Event' versus 'Type of Negotiation" – high competitive cases *(*)*

		TACTICS	COMMUNI-CATION EXCH.	*TOTAL*	
Type of Negotiation	FtF	543 29,6% (-3.1)	1289 70,4% (3.1)	*1832* *100%*	Pearson $\div^2$ = 9.797 (sign.= 0.002)
	ENeg	211 36,6% (3.1)	366 63,4% (-3.1)	*577* *100%*	Cramer's Phi = 0.064 (sign.= 0.002)
	TOTAL	*754* *31,3%*	*1655* *68,7%*	*2409*	Lambda = 0.000

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

Table 7c: Cross tabulation for 'Type of Event' versus 'Type of Negotiation" – low competitive cases *(*)*

		TACTICS	COMMUNI-CATION EXCH.	*TOTAL*	
Type of Negotiation	FtF	289 33,8% (-0.9)	567 66,2% (0.9)	*856* *100%*	Pearson $\div^2$ = 0.867 (sign.= 0.352)
	ENeg	92 36,9% (0.9)	157 63,1% (-0.9)	*249* *100%*	Cramer's Phi = -0.028 (sign.= 0.352)
	TOTAL	*381* *34,5%*	*724* *65,5%*	*1105*	Lambda = 0.000

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

The statistical tests on the cross tabulations in Tables 7a, 7b and 7c show that there is no statistically significant relationship between the type of negotiation conducted by buyers and the type of event occurring during the games in general (α = 0.002).

The relationship is rather weak as Cramers's phi is not very significant, but this is a clearer indication that H7 can be accepted than our analysis above. The probability of using more communication exchanges than tactics in face-to-face negotiations is clearly larger and vice versa.

When we look at both cases played by our participants separately however, we can remark that, the observed difference is due only to the high competitive cases (see Table 6b) played, where we can observe the same statistical relationships and phenomena. For the less competitive cases played (see Table 6c), the relationship is however not statistically significant (α = 0.352).

4.2.5. Influence of the negotiation mode on the type of communication exchanges used.

This relationship is tested for each of the individual communication exchanges in Tables 8a, 8b and 8c.

Table 8a: Cross tabulation for 'Type of Negotiation' versus 'Type of Communication Exchange' – total number of cases *(*)*

Negotiation Mode		FtF	ENeg	*TOTAL*	
Type of communication exchange	Ask Proposals	84 69,4% (-1.7)	37 30,6% (1.7)	*121* *100%*	Pearson $\div^2$ = 258.074 (sign.= 0.000) Cramer's V = 0.346 (sign.= 0.000) Lambda = 0.044 (sign. = 0.000)
	Closed Offers	244 72,2% (-1.6)	94 27,8% (1.6)	*338* *100%*	
	Open Offers	367 94,8% (9.7)	20 5,2% (-9.7)	*387* *100%*	
	Ask clarification	250 83,3% (3.7)	49 16,7% (-3.7)	*299* *100%*	
	Give clarification	284 86,3% (4.9)	45 13,7% (-4.9)	*329* *100%*	

	Counter-arguing	181 69,1% (-2.7)	81 30,9% (2.7)	*262* *100%*	
	Not agreeing	185 67,5% (-3.4)	89 32,5% (3.4)	*274* *100%*	
	Supporting	137 92,6% (5.0)	11 7,4% (-5.0)	*148* *100%*	
	Interrupting and not responding	124 56,1% (-7.2)	97 43,9% (7.2)	*221* *100%*	
	TOTAL	*1856* *78%*	*523* *22%*	*2379*	

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

There is a significant relationship between the type of exchanges used by the negotiators and the negotiation type (α = 0.000). In face-to-face circumstances most open communication exchanges such as open offers, giving clarification and supporting are more common than with e-negotiations. More closed communication exchanges such as closed offers, counter-arguing, not agreeing and interrupting or not responding are significantly more frequently used in E-negotiations. The only exception to this rule seems to be asking proposals, also an open communication exchange mode, which is significantly used more in E-negotiations. This picture is unchanged when we analyse the data on the high competitive cases played in Table 8b and on the low competitive cases played in

Table 8c. In each of the three analyses, the value of Cramer's V reaches or flirts with the threshold value 0.300. Thus, the observed relationships are to be considered as relatively strong indeed.

Table 8b: Cross tabulation for 'Type of Negotiation' versus 'Communication Exchanges' in more competitive situation *(*)*

Comm. Exchanges Used	Type of Negotiation			Output
	FtF	Eneg	Total	
Ask proposals	54 4.19% (-2.5)	27 7.38% (2.5)	81 4.89%	Pearson Correlation =139.194 & sign.=0 Cramer' s V =0.290 & sign.=0 Lambda =0.029 & sign.=0
Closed offers	175 13.58% (-2)	65 17.76% (2)	240 14.50%	
Open offers	270 20.95% (7.5)	15 4.10% (-7.5)	285 17.22%	
Ask for clarification	168 13.03% (1.8)	35 9.56% (-1.8)	203 12.27%	
Give clarification	190 14.74% (3)	32 8.74% (-3)	222 13.41%	
Counterarguing	120 9.31% (-3.1)	55 15.03% (3.1)	175 10.57%	
Not agreeing	130 10.09% (-4.0)	65 17.76% (4)	195 11.78%	
Supporting	96 7.45% (3.7)	8 2.19% (-3.7)	104 6.28%	
Interrupting / Not communicating	86 6.67% (-6.4)	64 17.49% (6.4)	150 9.06%	
Total	1289 100.00%	366 100.00%	1655 100.00%	

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals.

The output of statistical tests illustrated that according to the Chi-square test, there is a significant correlation between communication exchanges between negotiators in more competitive cases ($\alpha=0\leq0.05$). In addition, it was found that this correlation is strong according to Cramer's V ($\alpha=0\leq0.05$). Adjusted standard residuals show that using open offers is more likely in face to face negotiations than E-negotiations which confirms *H8*. In addition, asking and giving clarification and supporting are more common in face-to-face negotiations than in E-negotiation in these more competitive cases as well.

On the other hand, the findings show that Interrupting, not communicating and not agreeing are more likely in E-negotiations than face-to-face negotiations. Couteragruing, asking proposals and closed offers are more likely in E-negotiation comparing to face-to-face negotiation in more competitive cases.

Table 8c: Cross tabulation for 'Type of Negotiation' versus 'Communication Exchanges' in less competitive situation *(*)*

Comm. Exchanges Used	Type of Negotiation			Output
	FtF	Eneg	Total	
Ask proposals	30 5.29% (0.5)	10 6.37% (0.5)	40 5.52%	Pearson Correlation =67.752 & sign.=0 Cramer' s V =0.306 & sign.=0 Lambda =0.030 & sign.=0.135
Closed offers	69 12.17% (2)	29 18.47% (2)	98 13.54%	
Open offers	97 17.11% (4.4)	5 3.18% (4.4)	102 14.09%	
Ask for clarification	82 14.46% (1.8)	14 8.92% (1.8)	96 13.26%	
Give clarification	94 16.58% (2.6)	13 8.28% (2.6)	107 14.78%	
Counterarguing	61 10.76% (2)	26 16.56% (2)	87 12.02%	
Not agreeing	55 9.70% (2)	24 15.29% (2)	79 10.91%	
Supporting	41 7.23% (2.5)	3 1.91% (2.5)	44 6.08%	
Interrupting / Not communicating	38 6.70% (5.3)	33 21.02% (5.3)	71 9.81%	
Total	567 100.00%	157 100.00%	727 100.00%	

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals.

The output of statistical tests illustrated that according to the Chi-square test, there is a significant correlation between communication exchanges between negotiations in less competitive area ($\alpha=0\leq0.05$). In addition, it is found that this correlation is strong by Cramer' s V ($\alpha=0\leq0.05$).

Adjusted standard residual outputs confirm H8, just the same as prior part in less competitive situations. It shows that using open offers is more likely in face-to-face negotiations than E-negotiations. In addition, asking and giving clarification and supporting are more common in face to face negotiations than E-negotiation in more less cases as well. On the other hand, the findings show that Interrupting or not communicating and not agreeing are more likely in E-negotiations than face-to-face negotiations. Counter-arguing, asking proposal and closed offer are more likely in E-negotiation comparing to face-to-face negotiation in less competitive cases.

According to the findings in communication exchanges, there is no strong different between both more and less competitive cases in the items which are more applied in both face-to-face and E-negotiation.

4.2.6. Influence of the negotiation mode on the competitiveness of the tactics used.

We test whether there is a statistically significant relationship between those two variables using Tables 9a, 9b and 9c.

Table 9a: Cross tabulation for 'Type of Negotiation' versus 'Competitiveness of tactics' - total number of cases *(*)*

Negotiation Mode		FtF Negotiations	E Negotiations	*TOTAL*	
Competitiveness of tactics	Low	105 81,4% (2.2)	24 18,6% (-2.2)	*129* *100%*	Pearson $\div^2$ = 44.645 (sign.= 0.000) Cramer's V = 0.198 (sign.= 0.000) Lambda = 0.049 (sign. = 0.000) Somers' d = 0.169 (sign.= 0.000)
	Low Middle	330 82,1% (5.0)	72 17,9% (-5.0)	*402* *100%*	
	High Middle	275 69,1% (-2.4)	123 30,9% (2.4)	*398* *100%*	
	High	122 59,2% (-5.0)	84 40,8% (5.0)	*206* *100%*	
	TOTAL	*832* *73,3%*	*303* *26,7%*	*1135*	

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

From the statistical tests in Table 9a we can conclude that there is a significant relationship between the negotiation mode and the competitiveness of the tactics used (α = 0.000). Since Cramer's V is rather low (less than 0.300), the relationship is also relatively weak. Somers' d is positive which indicates a monotone relationship. This means that the less competitive the tactics are, the more they are used in face-to-face negotiations, whereas the more tactics are competitive, the more they will be used in E-negotiations. This can be read from the symbol of the ASR between brackets. Thus H6 is confirmed in general.

Table 9b: Cross tabulation for 'Level of Tactics' versus 'Type of Negotiation' in more competitive situation *(*)*

		Level of Tactics					Output
		Low Competitive Tactics Less 5	Low Middle Between 5 and 6	High Middle Between 6 and 7	High Competitive Over 7	Total	
Type of Negotiation	FtF	45 8.29 % (1.2)	225 41.44 % (4.7)	191 35.17 % (1.7)	82 15.10 % (4.5)	543 100.00 %	Pearson Correlation =33.213 & sign.=0
	ENeg	12 5.69 % (1.2)	49 23.22 % (1.4)	88 41.71 % (1.7)	62 29.38 % (4.5)	211 100.00 %	Cramer' s V =0.210 & sign.=0
	Total	57 7.56 %	274 36.34 %	279 37.00 %	144 19.10 %	754 100.00 %	Lambda =0.050 & sign.=0.095 Somers' d = 0.180 & sign.=0

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals.

The output of statistical tests in table 9b illustrates that according to the Chi-square test, there is a significant realtionship between communication exchanges between negotiators in the more competitive cases ($\alpha=0\leq0.05$). P-values of Cramer' s V and Somer's d which are smaller than 0.05 confirm these results. Cramer' s V shows however that the relationship is a weak one. Somers' d shows that there is a monotone relationship between two variables (Somers'd is positive). Adjusted standard residuals outputs show that in face-to-face negotiations, using low and low middle competitive tactics is more likely than in E-negotiations in more competitive cases which confirm H6 again. On the other hand, using high competitive and high middle competitive tactics is more likely in E-negotiations than in face-to-face-negotiations in more competitive cases.

Table 9c: Cross tabulation for 'Level of tactics' versus 'Type of Negotiation' in less competitive situation *(*)*

		Level of Tactics					Output
		Low Competitive Tactics Less 5	Low Middle Between 5 and 6	High Middle Between 6 and 7	High Competitive Over 7	Total	
Type of Negotiation	FtF	60 20.76 % (1.6)	105 36.33% (2)	84 29.07 % (1.6)	40 13.84 % (2.3)	289 100.00 %	Pearson Correlation =11.018 & sign.=0.012 Cramer' s V =0.170 & sign.=0.012 Lambda =0.035 & sign.=0.114 Somers' d =0.142 & sign.=0.001
	ENeg	12 13.04 % (1.6)	23 25.00 % (2)	35 38.04 % (1.6)	22 23.91 % (2.3)	92 100.00 %	
	Total	72 18.90 %	128 33.60 %	119 31.23 %	62 16.27 %	381 100.00 %	

(*) % refers to row percentage, numbers between brackets are standardized adjusted residuals

The output of statistical tests in table 9c illustrate that according to the Chi-square test, there is a significant correlation between communication exchanges between negotiators in less competitive cases (α=0.012, thus ≤0.05). P-values of Cramer' s V and Sommer's d which are smaller than 0.05 confirm the same results of showing relationship between variable the same as Chi-square test result as well. In addition, Cramer' s V shows the relationship is not that strong because 0.170 is close to zero. Somers' d shows that there is a monotone relationship between two types of variable (α =0≤0.05).

Adjusted standard residuals show that in face-to-face negotiations, using low and low middle competitive tactics is more likely than in E-negotiations in less competitive cases, which confirms H6 also in this situation. On the other hand, using high competitive and high middle competitive tactics is more likely in E-negotiations than in face-to-face negotiations in less competitive cases.

4.3. Correspondence analysis

Correspondence analysis is an exploratory technique designed to analyze simple two-way and multi-way tables containing some measure of correspondence between the rows and columns. It is a multivariate method for exploring cross-tabular data by converting such tables into graphical displays or maps where row and column characteristics are represented (Greenacre, M., 1993; Hair, Black, Babin, Anderson and Tatham, 2006). It is common to summarize the row and column coordinates in a single plot.

One of the applications of correspondence analysis consists of investigating a sequence of events, where events take place in discrete time domains. According to Thiessen, Rohlinger and Blasius (1994) the approach is well applicable to topics such as changes in opinions, orientations, attitudes, values and beliefs. They applied the method to study changes in the division of household tasks between men and women, during the first two years of their marriage, using trend data (panel data).

In this study, we will use correspondence analysis to summarize and visualize changes in the type of communication exchange over negotiation time. When using symmetric maps produced by such an analysis, distances between row and column points should not be directly interpreted. However, it is important to remember that in such plots, you can only interpret the distances between row points and the distances between column points, but not the distances between row points and column points. It is permissible, however, to compare the relative positions between the variables and the principal axes, i.e. one can use the cosines of the angles between the variables and the axes (Blasius, 1994).

In this paradigm, correspondence analysis was applied to summarize and visualize changes in the type of communication exchanges and tactics used over negotiation time. The following table represents the results of the data of tactics and communication exchanges which are available in appendix for the correspondence analysis using SPSS.

4.3.1. Correspondence analysis with regard to the sequence of tactics used in E-negotiations and face-to-face-negotiations

Table 10a: Summary

Dimension					Proportion of Inertia		Confidence Singular Value	
								Correlation
	Singular Value	Inertia	Chi Square	Sig.	Accounted for	Cumulative	Standard Deviation	2
1	,292	,085			***,862***	***,862***	,027	-,067
2	,099	,010			***,099***	***,960***	,026	
3	,063	,004			,040	1,000		
Total		,099	***112,309***	***,000***[a]	1,000	1,000		

a. 21 degrees of freedom

The output of correspondence analysis of table 10a represents that the correlation between time frames and competitiveness of the tactics is highly significant (Chi square = 112,309, sign = 0.000; inertia = ,099). 100% of the inertia (which is amount of association) is explained in three dimensions. The first dimension explains 85% and the second one 10%, while the third one represents only 4%.

Table 10b: Overview of the column points

Overview Column Points[a]

Time frame		Score in Dimension			Contribution				
					Of Point to Inertia of Dimension		Of Dimension to Inertia of Point		
	Mass	1	2	Inertia	1	2	1	2	Total
Q1F	,075	-,733	-,002	,012	,138	,000	,984	,000	,984
Q2F	,205	-,533	,186	,019	***,200***	,072	,909	,038	,947
Q3F	,249	-,326	-,087	,009	,091	,019	,823	,020	,843
Q4F	,204	,457	-,501	,018	***,146***	***,517***	,700	,284	,984
Q1E	,056	,203	,498	,003	,008	***,142***	,269	,550	,819
Q2E	,065	,306	,049	,002	,021	,002	,920	,008	,928
Q3E	,074	,522	,204	,006	,069	,031	,942	,049	,991
Q4E	,071	1,158	,548	,030	***,328***	***,217***	,919	,069	,989
Active Total	1,000			,099	1,000	1,000			

a. Symmetrical normalization

Table 10b indicates which part of the inertia on the two main dimensions is explained by the different time frames of both negotiation modes. According to these finding the second and fourth quarter of face-to-face negotiations and fourth quarter of E-negotiations are the main contributors to the dimension one. In dimension number 2, the fourth quarter of face-to-face negotiations which explains 51% of the inertia is of the most prominent element. Then the first and fourth quarter of E-

negotiations are also important. These three elements comprise 86% of the inertia of the second dimension. According to the last column all time frames are relatively well represented in the biplot.

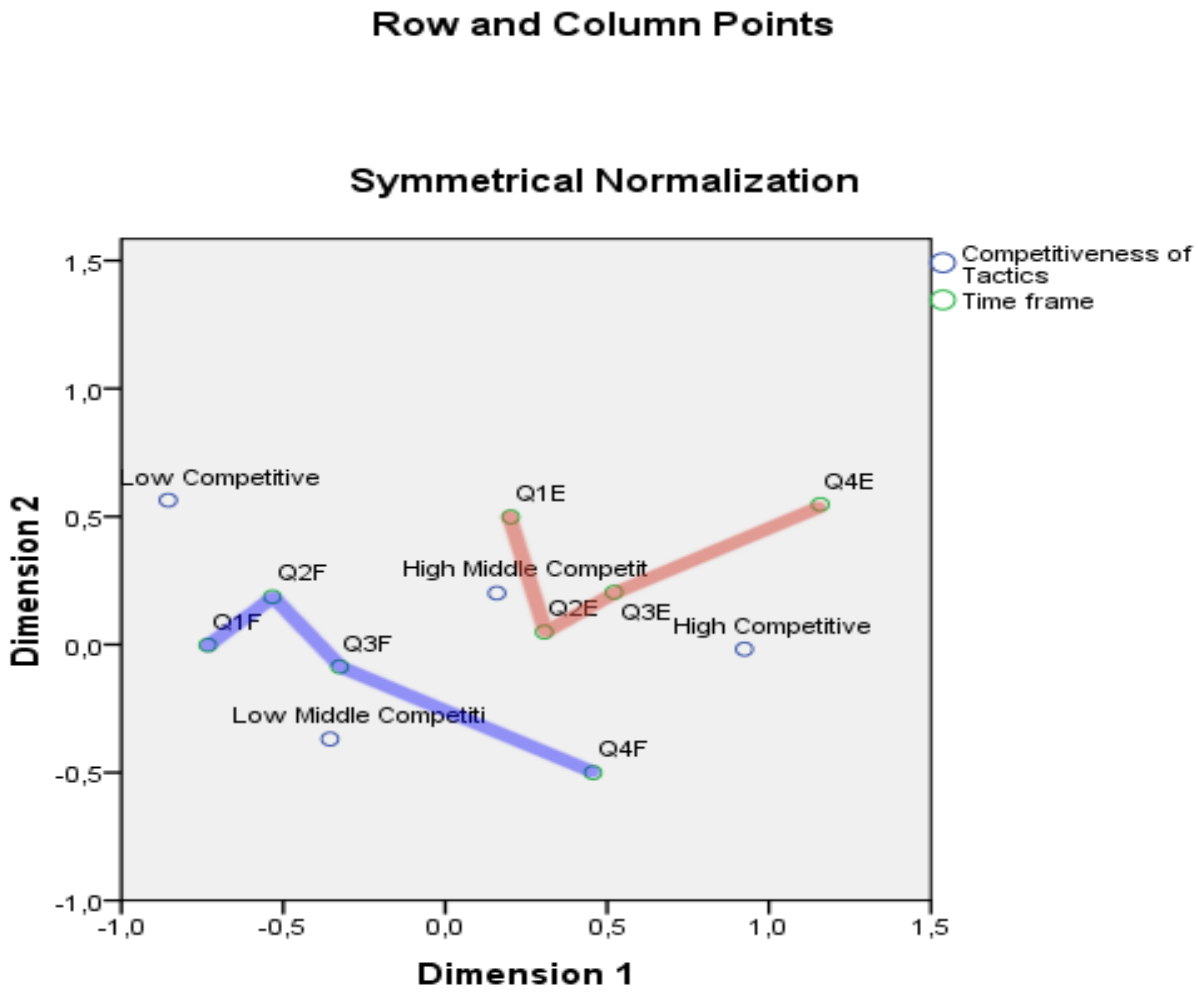
Table 10c: Overview of the row points

Competitiveness of Tactics		Score in Dimension			Contribution				
					Of Point to Inertia of Dimension		Of Dimension to Inertia of Point		
	Mass	1	2	Inertia	1	2	1	2	Total
Low Competitive	,114	-,855	,564	,029	***,285***	***,366***	,844	,124	,968
Low Middle Competitive	,355	-,356	-,369	,018	,154	***,490***	,733	,267	1,000
High Middle Competitive	,350	,160	,201	,006	,030	,143	,442	,237	***,679***
High Competitive	,181	,924	-,018	,046	***,531***	,001	,975	,000	,976
Active Total	1,000			,099	1,000	1,000			

a. Symmetrical normalization

According to the above table 10c, high and low competitive tactics are the primary contributors to the inertia of the first dimension. High competitive tactics alone explain more than than 53% of the variation on the first dimension. In the second dimension, low and low middle competitive tactics are the ones explaining more than the other types of tactics the variation on the dimension. Finally the last column shows that only the high middle competitive level of tactics is less well represented in the two-dimensional map (value is only 0.679).

Figure 1 represents the biplot of this analysis.



Evaluation of the angles of the levels of competitiveness tactics for face-to-face negotiations suggests that the low competitive tactics are more likely used in the first and second quarter of the negotiation, whereas in the third quarter the tactics are more inclined to the low middle competitive level before shifting to the high competitive level during the last quarter of negotiations. This trend towards more competitiveness of the tactics is prevalent in both the blue and the red line, indicating that the phenomenon is common to both face-to-face and E-negotiations. However, the red line is much more shifted to the right of the figure than the blue line. This indicates that in every

time frame, E-negotiations seem to be characterized by more competitive tactics than face-to-face negotiations.

4.3.2. Correspondence analysis with regard to the sequence of communication exchanges used in E-negotiations and face-to-face-negotiations

Table 11a: Summary

Dimension					Proportion of Inertia		Confidence Singular Value	
								Correlation
	Singular Value	Inertia	Chi Square	Sig.	Accounted for	Cumulative	Standard Deviation	2
1	,338	,114			***,534***	***,534***	,020	-,148
2	,254	,065			***,302***	***,836***	,019	
3	,155	,024			,113	,949		
4	,080	,006			,030	,978		
5	,052	,003			,013	,991		
6	,043	,002			,009	1,000		
7	,009	,000			,000	1,000		
Total		,214	***507,917***	***,000***[a]	1,000	1,000		

a. 56 degrees of freedom

The output of correspondence analysis of Table11a represents that the correlation between time frames and the different communication exchanges is highly significant (Chi square = 507.917, sign = 0.000; inertia =0,214). The whole inertia (which is amount of association) is explained in seven dimensions. The first dimension illustrates 53% and the second one explains 30% of the inertia however. The other five dimensions thus only represent 17 % of the observed variation in the data set. The first dimension obviously shows more than half of the association, therefore

considering the first dimension as the more important criterium for explanation of the variation is necessary. The second dimension may not be omitted however as it represents 30 % of the association.

The following table 11b is the column representation of the time frames

Table 11b: Overview Column Points[a]

Time Frame		Score in Dimension			Contribution				
					Of Point to Inertia of Dimension		Of Dimension to Inertia of Point		
	Mass	1	2	Inertia	1	2	1	2	Total
Q1F	,072	-,538	,387	,016	,062	,042	,451	,176	***,627***
Q2F	,259	-,426	,189	,021	***,139***	,036	,750	,111	,862
Q3F	,282	-,283	-,156	,015	,067	,027	,498	,114	***,611***
Q4F	,168	,339	-,940	,047	,057	***,585***	,138	,803	,941
Q1E	,028	,159	,586	,009	,002	,038	,026	,269	***,295***
Q2E	,058	,084	,676	,013	,001	***,105***	,011	,542	***,553***
Q3E	,079	,826	,698	,032	***,160***	***,152***	,575	,309	,884
Q4E	,054	1,786	,261	,061	***,512***	,015	,954	,015	,970
Active Total	1,000			,214	1,000	1,000			

a. Symmetrical normalization

The overview of column points (table 11b) indicates that time frame T4E is the main contributors to dimension 1 (accounting for 51 % of the variation), to a much lesser degree followed by T2F and T3E). Together they account for 80 % of the variation. For the second dimension T4F accounts for 58 % of the variation and in combination with T3E 73% of the variation is explained. The last column of the table indicates that T1E is badly represented in the two dimensional plot, while T2E, T1F and T3F could be represented better.

Table 11c: Overview Row Pointsa

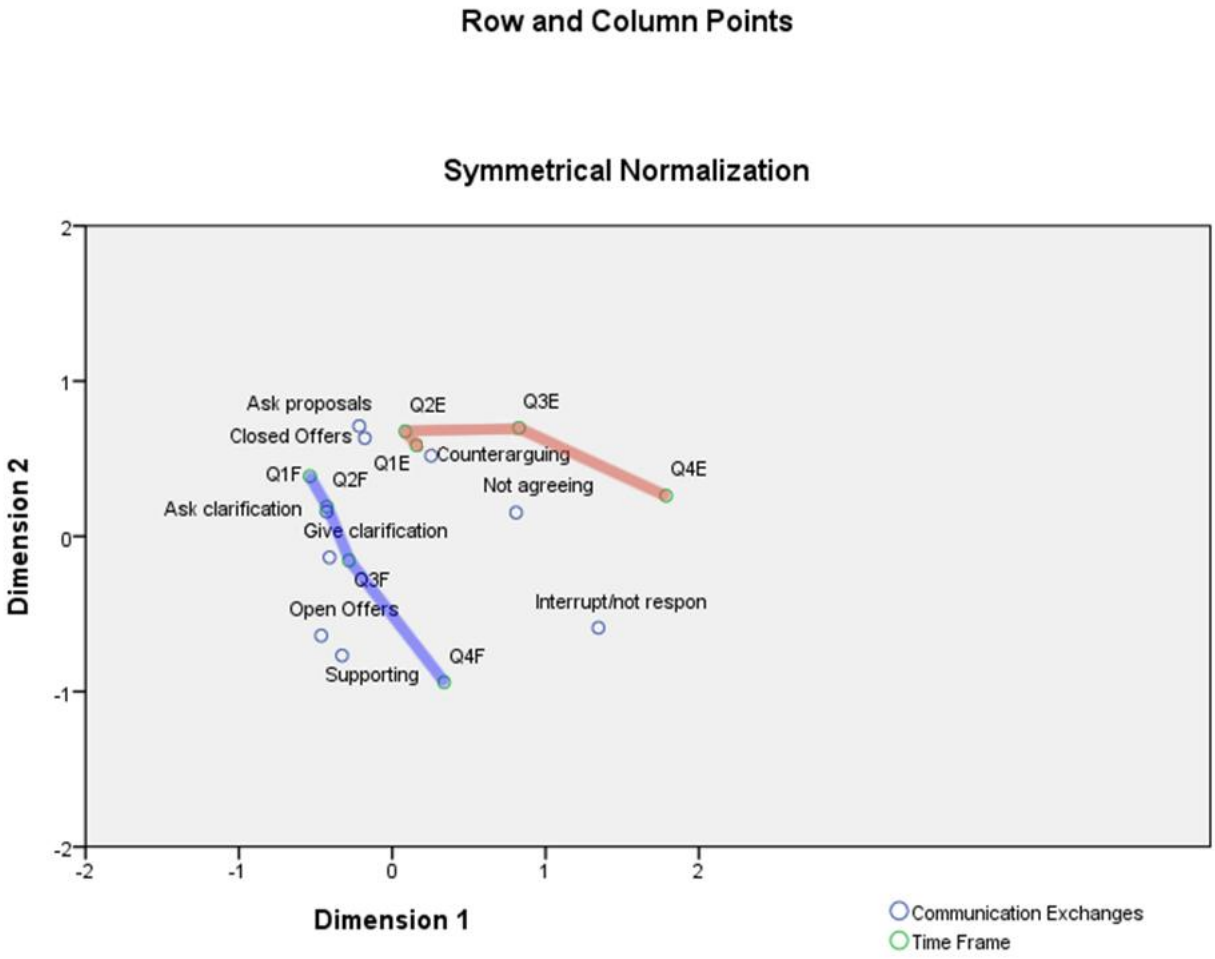
Communication Exchanges		Score in Dimension			Contribution				
					Of Point to Inertia of Dimension		Of Dimension to Inertia of Point		
	Mass	1	2	Inertia	1	2	1	2	Total
Ask proposals	,051	-,215	,710	,018	,007	***,101***	,043	,356	**,399**
Closed Offers	,142	-,179	,633	,017	,014	***,224***	,089	,832	,920
Open Offers	,163	-,464	-,640	,032	***,104***	***,262***	,369	,530	,899
Ask clarification	,126	-,428	,159	,009	,068	,012	,836	,087	,923
Give clarification	,138	-,409	-,136	,011	,069	,010	,710	,059	,769
Counterarguing	,110	,254	,519	,016	,021	***,117***	,149	,468	***,617***
Not agreeing	,121	,807	,153	,031	***,235***	,011	,863	,023	,886
Supporting	,062	-,327	-,768	,015	,020	***,144***	,146	,605	,751
Interrupt/not responding	,087	1,345	-,589	,063	***,464***	***,118***	,838	,121	,959
Active Total	1,000			,214	1,000	1,000			

a. Symmetrical normalization

When looking at the overview of row points (Table 11c), we observe that not agreeing and not responding are the main contributors to dimension 1. Together they account for 68 % of the variation. For the second dimension open and closed offers and supporting are the main contributors, accounting for only 62 % of the variation. Only open offers explain another 10 % of the variation. In the dimension 2, the dispersion of the elements is more outspoken. Open offers and closed offers with 26% and 22% respectively show the highest rate of description of the inertia. But they do not explain together even 50 % of the observed variation. Supporting with 14% t and the interrupting/not responding and counter-arguing each with 11% still explain part of the association on this dimension. From the last column in the table we can infer that asking proposals and counter-arguing are the least well represented in the two dimensional plot in Figure 2.

Figure 2 represents the biplot of the nine different communication exchanges with the four time frames.

Figure 2 represents the biplot of the communication exchanges.



The figure shows that some of the communication exchanges such as asking clarification and giving clarification are more likely in the first and the second quarter of the face-to-face negotiations, while in the two last quarter open offers and supporting are more common for face-to-face negotiations. Some attraction is also exerted by more closed exchanges like interruption/ not responding in this last quarter with respect to face-to-face communications. E-negotiations show a considerable closeness to all types of closed communication exchanges much more and this is the case for each time frame. There is clearly a shift towards the right which is more outspoken than for face-to-face communications. In the first and the second quarters, asking proposals and closed offers are still close and comparable to the face-to-face negotiation line. But as of the third quarter only closed exchanges such as counter-arguing, not agreeing and interrupting are important in e-

negotiations. Thus the trend of both E-negotiations and face-to-face negotiations which has from asking proposals and closed offers downward is more leftward oriented and also more downward for face-to-face negotiations than for e-negotiations. This indicates that in face-to-face negotiations the prevalence of more open communications (open offers and supporting are closely located to the third and fourth quarter) remains stable. This is inverse to what we observed for the E-negotiations.

4.3.3. Conclusion of the correspondence analyses

Both correspondence analyses indicate that the trends indicated by H6 and H8, which we have confirmed in the previous section of this analysis, become both more outspoken the more the negotiation goes on. Thus the competitiveness of the used tactics and the closeness of the communication exchanges used becomes more prevalent in both face-to-face negotiations and in E-negotiations during the course of the game, but this is a trend much more outspoken for E-negotiation cases than for face-to-face negotiation cases.

5. Conclusions

The rapid rate of development of E-negotiations in business makes it important to investigate its problems and whether differences with the traditional way of negotiations (face-to-face negotiations) exist. These are crucial issues in the negotiation area in order to apply the best practices in all circumstances and in order to increase the quality of the negotiations and their results.

The findings of this survey confirm or reject some of the hypotheses built on the bases of previous research, but rely on data collected from professional buyer games. Results of these analyses were examined with the SPSS X package.

In this part we are intended to overview the hypotheses which were evaluated in this survey and explain some applications and recommendations for applying in practice and researches.

Our most important conclusions are the following ones:

- The time consumed in E-negotiations was shorter than the average time spent in face-to-face negotiations (confirming H1).
- The negotiation mode does not play a determinant role in differentiating the objectives of the negotiations (accepting H2).
- The negotiation mode does play some determinant role in differentiating the results of the negotiations, particularly with respect to low and low middle results which are more probable in face-to-face negotiations (partial rejection of H3).
- No deal results are more likely with E-negotiations than with face-to-face negotiations (accepting H4).
- The probability that E-negotiations in more competitive situations lead to better outcomes is larger than in less competitive situations (accepting H5).
- E-negotiators seem to use more competitive tactics (accepting H6) and more closed communication exchanges (accepting H8) frequently than face-to-face negotiators.
- Communication exchanges are relatively more frequent in face-to-face negotiations than in E-negotiations, specifically in higher competitive cases (partial acceptance of H7).

- The correspondence analyses show that the trends indicated by H6 and H8 become more outspoken towards the end of the negotiations.

6. Implications for management

Due to the fact that average time consumed in E-negotiations was shorter than the average time spent in face-to-face negotiations, professional buyers can consider certainly consider using E-negotiations in the urgent situations when they have lack of the time and need to go very quickly.

The second hypothesis has suggested that the negotiation mode is not playing a determinant role in differentiating the objectives of the negotiators. However, our findings did not confirm H3. Some differences in the results obtained between both negotiation modes were observed. Face-to-face negotiations lead more often to low middle and low results than E-negotiations and E-negotiations lead more often to failure (confirmation of H4). This might be interpreted as follows: if things become and are difficult, face-to-face negotiators might be willing to compromise more leading to lower results, whereas E-negotiators will not cede and accept failure more readily. Thus, in situations where one really needs a deal, for instance when there are only a few suppliers and the risk of not being delivered is high, then E-negotiations are not the best way to handle. Indeed, since we observe that the E-negotiations concluded in not dealing much more than face-to-face negotiations (H4), this can also be proof for paying more attention in selecting the face-to-face negotiation mode for the important deal or at least applying a kind of combination of two modes in order to avoid not having deal.

However we should be cautious to choose one specific type of negotiation mode in cases with different levels of competitiveness, as our research discoveries confirm that the E-negotiation mode lead to better results in more competitive situations compared to the less competitive situations (H5). Thus in very competitive situations such as negotiating with different suppliers all offering a fairly equivalent product, E-negotiations might lead to better results than face-to-face negotiations. Moreover, as the competition between suppliers is large, the E-mode which leads to quicker negotiations might be better as well. But one must acknowledge the risk of higher chances of no deals as well. This is in these cases however not so much of a problem as there are many alternatives.

Face-to-face negotiators tend to apply lower level competitive tactics more often than E-negotiators do (acceptance of H6 and H8). They also use more often open communication tactics. Considering these facts, professional buyers can predict the level of tactics and type of communication exchanges that opponents may use during face-to-face negotiations and have a clear indication whether this is compatible with what they have developed as a strategy for the products to be

bought. Thus, when the strategy is to use tactics that are not that competitive, the process of bargaining can be less complicated and buyers may prefer to face-to-face negotiations to struggle less with upcoming tactics from the opponents.

The average duration of the used communication exchanges and tactics shows no big differences, as already indicated. The number of communication exchanges is however a little bit higher in face-to-face negotiations and less tactics are used, certainly in more competitive cases (H7). Thus, the more complicated the things to be conveyed and the more elaborate one assumes the negotiation to be, the more one will be willing to go for face-to-face negotiations.

Open types of communication exchanges were observed in face-to-face negotiations which might be a result of “schmoozing” or “socializing” as well, which certainly will take place in the beginning of a negotiation. The correspondence analyses thus indicate that when one wants to use a mixed mode in the negotiation, combining E-negotiations and face-to-face negotiations, the end bmight be short and e-driven, the beginning may certainly not.

In short, E-negotiations will be more useful for buyers in cases of:

- Required quick reactions
- Easy deals
- Many different suppliers competing with one another
- The end of the negotiation
- Cases where chances of success are very limited indeed.

In opposite situations, buyers might prefer face-to-face negotiations, but a combined mode on negotiating might be welcome as well.

7. Suggestions for future research

This study has some limitations which can be removed in the future researches.

Limitations of data are an inevitable part of each research and should always be considered in interpreting the results of the analysis and future research ideas as well.

First of all, it is important to consider that although the participants in this research were all professional buyers, the research was based on the observation of some role plays or games not on real negotiation cases. This may create some artificial environment in which players know it is not really a critical situation. Some factors such as pressure from higher levels of the firm or stress during the discussion may be less prevalent, which can influence the results of the analysis somewhat. Longitudinal research of real life cases should complement this research, but as Matz (2004) indicated, many companies are very reluctant in admitting observers during real time negotiations given the safety issue of data, the difficulty in getting the right appointments with more people involved and so on. This objection however might be less important in cases of e-negotiations.

Second, we should consider the fact that the amount of data collected in both negotiation modes and during the period the data were collected also creates some limitations on the interpretation of the results. The number of cases for both negotiation modes, although sufficient, is quite different. A more equal number of cases should have been better and gathering the data in the same period would have been better as well. The fact that the face-to-face data were gathered over a period of 18 years moreover poses a threat: were buyers still operating under the same circumstances throughout the period? A split test should have helped, but was not performed. The time periods during which the data were collected for both modes were not exactly either. Developing technology and the methods of negotiations are inevitably influence the way business is done and thus the data as well. Future research should be situated in an identical period and try to find equal number of cases to have better comparable data.

Moreover the participants in the games were all professional buyers. During the games some of them thus had to behave as sellers which was not their natural way of acting. That is the reason why we only analyses the negotiation behavior of the buying side. In upcoming studies we should consider that both sides of negotiation play a different role and that the interplay is an interesting

phenomenon to be observed. In that case, both parties should at best be playing their normal natural position in order to be able to observe realistic actions and reactions.

In this study, we did not take any cultural differences between the actors and their potential effects during negotiation into account. But it is beyond doubt that these characteristics and their influences on the two main negotiation modes are a valuable topic for the future research. Taking advantage of knowing the opponent's cultural differences can help negotiators of the international or multi-national firms to enhance their capacity to ameliorate the quality of their negotiations.

In addition gender, background, psychological profile and its effects, mood of the day and experiences of the players may play a salient role in any negotiation. Evaluating the results of our analysis in combination with these parameters is worthwhile and needed. Thus future research should take each of these elements into account and gather them more carefully than we actually did.

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8.2. Appendices

<u>Annex 1:</u> The 35 different tactics observed in our study and how competitive they were considered by the participants of the games.

Negotiation Tactics	Competitive Evaluation (Scale 1 till 9), as measured by 424 participants of our games.
Agenda	4,67
Procedures	5,21
Workgroups (commissions)	4,86
Time Out	4,98
Poker Face	6,01
Surprise	6,28
Silence	5,87
What if?	4,32
Homework	5,20
Confusion	5,01
Incorrect summary	6,33
Good Guy Bad Guy	6,07
Take it or leave it	7,62
Be realistic	6,78
Put yourself in my shoes	5,22
Salami	6,33
Limits	6,11
Budget (bogey)	6,22
Precedents	5,63
Oriental Bazaar	6,49
Dessert	5,41
Round Figures	5,40

Audition	6,66
Greek Gifts	6,43
Repetition (Chinese crunch)	5,55
Funny Money	5,69
Broken Record	5,52
Fogging	4,88
Stalling	6,01
Deadlock	7,41
Deadlines	5,82
Fait Accompli	7,63
Hostage	7,01
Escalation	5,75
Limited Authority	6,33
Absence of Authority	6,22
Full Authority	5,49
Priority on the left	6,09

Annex 2

Number of cases played	More Competitive Case	Less Competitive Case	Total
FtF	157	136	293
Eneg	82	66	148
Total	239	202	441

Annex 3

Evaluation of competitiveness	More Competitive Case	Less Competitive Case
FtF	5.86	4.33
Eneg	6.24	4.78

Annex 4.1

Objectives of negotiators More competitive case	High Objective	High Middle Objective	Middle Objective	Low Middle Objective	Low Objective	Total
FtF	32	48	60	15	2	157
Eneg	21	28	30	3	0	82
Total	53	76	90	18	2	239

Annex 4.1.1

Objectives of negotiators More competitive case	High Objective	High Middle Objective	Middle Objective	Low Middle Objective	Low Objective	Total
FtF	20.38%	30.57%	38.22%	9.55%	1.27%	100.00%
Eneg	25.61%	34.15%	36.59%	3.66%	0.00%	100.00%
Total	22.18%	31.80%	37.66%	7.53%	0.84%	100.00%

Annex 4.2

Objectives of negotiators Less competitive case	High Objective	High Middle Objective	Middle Objective	Low Middle Objective	Low Objective	Total
FtF	5	14	48	40	29	136
Eneg	4	9	27	17	9	66
Total	9	23	75	57	38	202

Annex 4.2.1

Objectives of negotiators Less competitive case	High Objective	High Middle Objective	Middle Objective	Low Middle Objective	Low Objective	Total
FtF	3.68%	10.29%	35.29%	29.41%	21.32%	100.00%
Eneg	6.06%	13.64%	40.91%	25.76%	13.64%	100.00%
Total	4.46%	11.39%	37.13%	28.22%	18.81%	100.00%

Annex 5.1

Results obtained More competitive case	High Result	High Middle Result	Middle Result	Low Middle Result	Low Result	No Deal	Total
FtF	15	46	38	22	3	33	157
Eneg	10	25	15	7	1	24	82
Total	25	71	53	29	4	57	239

Annex 5.1.1

Results obtained More competitive case	High Result	High Middle Result	Middle Result	Low Middle Result	Low Result	No Deal	Total
FtF	9.55%	29.30%	24.20%	14.01%	1.91%	21.02%	100.00%
Eneg	12.20%	30.49%	18.29%	8.54%	1.22%	29.27%	100.00%
Total	10.46%	29.71%	22.18%	12.13%	1.67%	23.85%	100.00%

Annex 5.2

Results obtained Less competitive case	High Result	High Middle Result	Middle Result	Low Middle Result	Low Result	No Deal	Total
FtF	1	31	78	18	4	4	136
Eneg	1	17	35	4	0	9	66
Total	2	48	113	22	4	13	202

Annex 5.2.1

Results obtained Less competitive case	High Result	High Middle Result	Middle Result	Low Middle Result	Low Result	No Deal	Total
FtF	0.74%	22.79%	57.35%	13.24%	2.94%	2.94%	100.00%
Eneg	1.52%	25.76%	53.03%	6.06%	0.00%	13.64%	100.00%
Total	0.99%	23.76%	55.94%	10.89%	1.98%	6.44%	100.00%

Annex 6.1

Number of observed events More competitive case	Tactics	Comm. Exch.	Tactics/ case	Comm. Exch./case	Tactics/ Comm. Exch.
FtF	543	1289	3.46	8.21	0.42
Eneg	211	366	2.57	4.46	0.58
Total	754	1655	3.15	6.92	0.46

Annex 6.2

Number of observed events Less competitive case	Tactics	Comm. Exch.	Tactics/ case	Comm. Exch./case	Tactics/ Comm. Exch.
FtF	289	567	2.13	4.17	0.51
Eneg	92	157	1.39	2.38	0.59
Total	381	724	1.89	3.58	0.53

Annex 7.1

Tactics used More competitive case	FtF	Eneg	Total
Low Competitive Tactics (Less 5)	45	12	57
Low Middle (Between 5 and 6)	225	49	274
High Middle (Between 6 and 7)	191	88	279
High Competitive (Over 7)	82	62	144
Total	543	211	754

Annex 7.1.1

Tactics used More competitive case	FtF	Eneg	Total
Low Competitive Tactics (Less 5)	8.29%	5.69%	7.56%
Low Middle (Between 5 and 6)	41.44%	23.22%	36.34%
High Middle (Between 6 and 7)	35.17%	41.71%	37.00%
High Competitive (Over 7)	15.10%	29.38%	19.10%
Total	100.00%	100.00%	100.00%

Annex 7.2

Tactics used Less competitive case	FtF	Eneg	Total
Low Competitive Tactics (Less 5)	60	12	72
Low Middle (Between 5 and 6)	105	23	128
High Middle (Between 6 and 7)	84	35	119
High Competitive (Over 7)	40	22	62
Total	289	92	381

Annex 7.2.1

Tactics used Less competitive case	FtF	Eneg	Total
Low Competitive Tactics (Less 5)	20.76%	13.04%	18.90%
Low Middle (Between 5 and 6)	36.33%	25.00%	33.60%
High Middle (Between 6 and 7)	29.07%	38.04%	31.23%
High Competitive (Over 7)	13.84%	23.91%	16.27%
Total	100.00%	100.00%	100.00%

Annex 8.1

Comm. Exchanges Used More competitive case	FtF	Eneg	Total
Ask proposals	54	27	81
Closed offers	175	65	240
Open offers	270	15	285
Ask for clarification	168	35	203
Give clarification	190	32	222
Counterarguing	120	55	175
Not agreeing	130	65	195
Supporting	96	8	104
Interrupting/Not communicating	86	64	150
Total	1289	366	1655

Annex 8.1.1

Comm. Exchanges Used More competitive case	FtF	Eneg	Total
Ask proposals	4.19%	7.38%	4.89%
Closed offers	13.58%	17.76%	14.50%
Open offers	20.95%	4.10%	17.22%
Ask for clarification	13.03%	9.56%	12.27%
Give clarification	14.74%	8.74%	13.41%
Counterarguing	9.31%	15.03%	10.57%
Not agreeing	10.09%	17.76%	11.78%
Supporting	7.45%	2.19%	6.28%
Interrupting/Not communicating	6.67%	17.49%	9.06%
Total	100.00%	100.00%	100.00%

Annex 8.2

Comm. Exchanges Used Less competitive case	FtF	Eneg	Total
Ask proposals	30	10	40
Closed offers	69	29	98
Open offers	97	5	102
Ask for clarification	82	14	96
Give clarification	94	13	107
Counterarguing	61	26	87
Not agreeing	55	24	79
Supporting	41	3	44
Interrupting/Not communicating	38	33	71
Total	567	157	724

Annex 8.2.1

Comm. Exchanges Used Less competitive case	FtF	Eneg	Total
Ask proposals	5.29%	6.37%	5.52%
Closed offers	12.17%	18.47%	13.54%
Open offers	17.11%	3.18%	14.09%
Ask for clarification	14.46%	8.92%	13.26%
Give clarification	16.58%	8.28%	14.78%
Counterarguing	10.76%	16.56%	12.02%
Not agreeing	9.70%	15.29%	10.91%
Supporting	7.23%	1.91%	6.08%
Interrupting/Not communicating	6.70%	21.02%	9.81%
Total	100.00%	100.00%	100.00%

Annex 9

Average duration in minutes	More Competitive Case	Less Competitive Case
FtF	41	51
Eneg	23	32
Percentage Eneg/FtF	56.10%	62.75%

Annex 10.1

Tactics used/time sequence More competitive case FtF	Q1	Q2	Q3	Q4	Total
Low Competitive Tactics (Less 5)	7	19	15	4	45
Low Middle (Between 5 and 6)	26	64	77	58	225
High Middle (Between 6 and 7)	20	49	70	52	191
High Competitive (Over 7)	3	17	20	42	82
Total	56	149	182	156	543

Annex 10.1.1

Tactics used/time sequence More competitive case FtF	Q1	Q2	Q3	Q4	Total
Low Competitive Tactics (Less 5)	12.50%	12.75%	8.24%	2.56%	8.29%
Low Middle (Between 5 and 6)	46.43%	42.95%	42.31%	37.18%	41.44%
High Middle (Between 6 and 7)	35.71%	32.89%	38.46%	33.33%	35.17%
High Competitive (Over 7)	5.36%	11.41%	10.99%	26.92%	15.10%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Annex 10.2

Tactics used/time sequence Less competitive case FtF	Q1	Q2	Q3	Q4	Total
Low Competitive Tactics (Less 5)	8	25	21	6	60
Low Middle (Between 5 and 6)	12	29	38	26	105
High Middle (Between 6 and 7)	8	22	31	23	84
High Competitive (Over 7)	1	8	11	20	40
Total	29	84	101	75	289

Annex 10.2.1

Tactics used/time sequence Less competitive case FtF	Q1	Q2	Q3	Q4	Total
Low Competitive Tactics (Less 5)	27.59%	29.76%	20.79%	8.00%	20.76%
Low Middle (Between 5 and 6)	41.38%	34.52%	37.62%	34.67%	36.33%
High Middle (Between 6 and 7)	27.59%	26.19%	30.69%	30.67%	29.07%
High Competitive (Over 7)	3.45%	9.52%	10.89%	26.67%	13.84%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Annex 11.1

Tactics used/time sequence More competitive case Eneg	Q1	Q2	Q3	Q4	Total
Low Competitive Tactics (Less 5)	5	3	3	1	12
Low Middle (Between 5 and 6)	12	15	14	8	49
High Middle (Between 6 and 7)	16	19	24	29	88
High Competitive (Over 7)	11	13	16	22	62
Total	44	50	57	60	211

Annex 11.1.1

Tactics used/time sequence More competitive case Eneg	Q1	Q2	Q3	Q4	Total
Low Competitive Tactics (Less 5)	11.36%	6.00%	5.26%	1.67%	5.69%
Low Middle (Between 5 and 6)	27.27%	30.00%	24.56%	13.33%	23.22%
High Middle (Between 6 and 7)	36.36%	38.00%	42.11%	48.33%	41.71%
High Competitive (Over 7)	25.00%	26.00%	28.07%	36.67%	29.38%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Annex 11.2

Tactics used/time sequence Less competitive case Eneg	Q1	Q2	Q3	Q4	Total
Low Competitive Tactics (Less 5)	4	4	3	1	12
Low Middle (Between 5 and 6)	5	8	8	3	24
High Middle (Between 6 and 7)	7	7	10	10	34
High Competitive (Over 7)	4	5	6	7	22
Total	20	24	27	21	92

Annex 11.2.1

Tactics used/time sequence Less competitive case Eneg	Q1	Q2	Q3	Q4	Total
Low Competitive Tactics (Less 5)	20.00%	16.67%	11.11%	4.76%	13.04%
Low Middle (Between 5 and 6)	25.00%	33.33%	29.63%	14.29%	26.09%
High Middle (Between 6 and 7)	35.00%	29.17%	37.04%	47.62%	36.96%
High Competitive (Over 7)	20.00%	20.83%	22.22%	33.33%	23.91%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Annex 12.1

Comm. Exch. Used More competitive case FtF	Q1	Q2	Q3	Q4	Total
Ask proposals	13	22	16	3	54
Closed offers	26	67	67	15	175
Open offers	17	67	110	76	270
Ask for clarification	16	68	70	14	168
Give clarification	15	75	71	29	190
Counterarguing	11	50	50	9	120
Not agreeing	7	38	51	34	130
Supporting	11	25	29	31	96
Interrupting/Not communicating	1	8	26	51	86
Total	117	420	490	262	1289

Annex 12.1.1

Comm. Exch. Used More competitive case FtF	Q1	Q2	Q3	Q4	Total
Ask proposals	11.11%	5.24%	3.27%	1.15%	4.19%
Closed offers	22.22%	15.95%	13.67%	5.73%	13.58%
Open offers	14.53%	15.95%	22.45%	29.01%	20.95%
Ask for clarification	13.68%	16.19%	14.29%	5.34%	13.03%
Give clarification	12.82%	17.86%	14.49%	11.07%	14.74%
Counterarguing	9.40%	11.90%	10.20%	3.44%	9.31%
Not agreeing	5.98%	9.05%	10.41%	12.98%	10.09%
Supporting	9.40%	5.95%	5.92%	11.83%	7.45%
Interrupting/Not communicating	0.85%	1.90%	5.31%	19.47%	6.67%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Annex 12.2

Comm. Exch. Used Less competitive case FtF	Q1	Q2	Q3	Q4	Total
Ask proposals	6	10	6	8	30
Closed offers	10	26	27	6	69
Open offers	9	34	45	9	97
Ask for clarification	7	32	23	20	82
Give clarification	7	35	22	30	94
Counterarguing	5	24	18	14	61
Not agreeing	4	18	20	13	55
Supporting	5	11	11	14	41
Interrupting/Not communicating	1	5	8	24	38
Total	54	195	180	138	567

Annex 12.2.1

Comm. Exch. Used Less competitive case FtF	Q1	Q2	Q3	Q4	Total
Ask proposals	11.11%	5.13%	3.33%	5.80%	5.29%
Closed offers	18.52%	13.33%	15.00%	4.35%	12.17%
Open offers	16.67%	17.44%	25.00%	6.52%	17.11%
Ask for clarification	12.96%	16.41%	12.78%	14.49%	14.46%
Give clarification	12.96%	17.95%	12.22%	21.74%	16.58%
Counterarguing	9.26%	12.31%	10.00%	10.14%	10.76%
Not agreeing	7.41%	9.23%	11.11%	9.42%	9.70%
Supporting	9.26%	5.64%	6.11%	10.14%	7.23%
Interrupting/Not communicating	1.85%	2.56%	4.44%	17.39%	6.70%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Annex 13.1

Comm. Exch. Used More competitive case Eneg	Q1	Q2	Q3	Q4	Total
Ask proposals	6	11	6	4	27
Closed offers	8	23	25	9	65
Open offers	2	5	5	3	15
Ask for clarification	5	13	13	4	35
Give clarification	4	14	12	2	32
Counterarguing	3	6	31	15	55
Not agreeing	7	9	29	35	80
Supporting	3	3	1	1	8
Interrupting/Not communicating	5	9	15	20	49
Total	43	93	137	93	366

Annex 13.1.1

Comm. Exch. Used More competitive case Eneg	Q1	Q2	Q3	Q4	Total
Ask proposals	13.95%	11.83%	4.38%	4.30%	7.38%
Closed offers	18.60%	24.73%	18.25%	9.68%	17.76%
Open offers	4.65%	5.38%	3.65%	3.23%	4.10%
Ask for clarification	11.63%	13.98%	9.49%	4.30%	9.56%
Give clarification	9.30%	15.05%	8.76%	2.15%	8.74%
Counterarguing	6.98%	6.45%	22.63%	16.13%	15.03%
Not agreeing	16.28%	9.68%	21.17%	37.63%	21.86%
Supporting	6.98%	3.23%	0.73%	1.08%	2.19%
Interrupting/Not communicating	11.63%	9.68%	10.95%	21.51%	13.39%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Annex 13.2

Comm. Exch. Used Less competitive case Eneg	Q1	Q2	Q3	Q4	Total
Ask proposals	4	4	1	1	10
Closed offers	6	9	9	5	29
Open offers	2	2	1	0	5
Ask for clarification	3	5	5	1	14
Give clarification	3	6	4	0	13
Counterarguing	1	8	11	6	26
Not agreeing	2	5	7	10	24
Supporting	1	2	0	0	3
Interrupting/Not communicating	2	5	13	13	33
Total	24	46	51	36	157

Annex 13.2.1

Comm. Exch. Used Less competitive case Eneg	Q1	Q2	Q3	Q4	Total
Ask proposals	16.67%	8.70%	1.96%	2.78%	6.37%
Closed offers	25.00%	19.57%	17.65%	13.89%	18.47%
Open offers	8.33%	4.35%	1.96%	0.00%	3.18%
Ask for clarification	12.50%	10.87%	9.80%	2.78%	8.92%
Give clarification	12.50%	13.04%	7.84%	0.00%	8.28%
Counterarguing	4.17%	17.39%	21.57%	16.67%	16.56%
Not agreeing	8.33%	10.87%	13.73%	27.78%	15.29%
Supporting	4.17%	4.35%	0.00%	0.00%	1.91%
Interrupting/Not communicating	8.33%	10.87%	25.49%	36.11%	21.02%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

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