Systematic Literature Review of Strategic Behavior in Negotiation

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ABSTRACT
Negotiation is a frequent phenomenon in everyday life. Whenever a person needs another person to solve their problems, their intertwining goals and preferences should be adjusted through negotiation. From this recurrent demand of dealing with negotiation, we constantly seek ways to improve it. One of the ways is by learning and assessing strategic behavior in negotiation. Starting from this objective, we systematically reviewed 1,490 articles to build a comprehensive outlook on negotiation behavior research progress. We use five systems of observation level to categorize the articles included in this study that are: (1) intrapersonal system, (2) interpersonal system, (3) group system, (4) organizational system, and (5) virtual system. The result showed us that the research landscape has progressed toward the development of automated negotiating agents besides observing human negotiators exclusively. We also see the emerging interplay between systems of observation level.

KEYWORDS: *negotiation behavior, strategic behavior, automated negotiating agent, systematic literature review*

JEL CLASSIFICATION: *D70. D91, M10*

1. INTRODUCTION

The negotiation process has been a prevalent issue in everyday life. Whenever a person needs another to collaborate to solve a problem, the decision-making process demands a concordant preference from each party involved. This type of negotiation process differs from normative decision-making that has a solid right and wrong value. Negotiation, considered preferential decision-making, requires personal goals and motivations as the basis of its assessment (Phillips et al., 2016). During this type of decision-making, decision-makers often make compromises and trade-offs to reach collective goals (Dutilh & Rieskamp, 2016). The negotiation research landscape has evolved from being studied only in the decision analytics field to being expanded by social psychological research and even reaching the domain of neurobiology (Tsay & Bazerman, 2009). Hence, negotiation behavior research could be a standalone and mature research field as it has a diverse research approach and point of view (Agndal et al., 2017).

Even though negotiation is considered preferential, the negotiator's behavior has been described in the normative model, particularly from the behavioral economic research approach. Nevertheless, negotiators' actual behavior often diverts from the normative model (Thompson et al., 2010); hence, it needed to be observed beyond the economic point of view, such as their social and psychological inclination (Curhan et al., 2006). Interpersonal dynamics further complicate these internal preferences between negotiators. Åge and Eklinder-Frick (2017) labeled the demand of navigating different preferences between parties involved in the search for a win-win solution as "goal-oriented balancing". The complexity of

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demands in the real-life negotiation process has also been regarded as releasing “distributive knot”, sometimes satisfying more than two "opposing" parties (Lempereur & Pekar, 2017).
Ultimately, the assessment process of strategic negotiation behavior determines what separates a great value creator in negotiation from the rest (Elfenbein et al., 2009). It is essential for negotiation research to provide a support system that could distinguish whether a particular behavior that emerges in interaction should be further improved or not (Vetschera et al., 2013). Thus, the demand for novel ways to discern such behavior has always been high, particularly in a simulation setting that could uncover patterns in action and induce specific mechanisms to test theory (Carbonneau et al., 2014; Koeszegi & Vetschera, 2010).

Several literature reviews have been published in the negotiation research landscape. However, these reviews mainly deal with specific precedents for a particular negotiation behavior. Most of the past literature reviews on the negotiation process observed the internal process of negotiators, such as affective states (Forgas, 2017; Hunsaker, 2017), trust (Kong et al., 2014; Johnson & Mislin, 2011), cognitive biases (Caputo, 2013), and strategic information processing (Toma & Butera, 2015). Other studies take the path of analyzing the role of technology in the negotiation field, such as how it can be the communication media for negotiation process to take place (Geiger & Laubert, 2018), computer negotiator (March, 2021; Sanchez-Anguix et al., 2013), Cloud Computing service negotiation (Shojaiemehr et al., 2018), and automatic contract negotiation (Marino et al., 2019). With this study, we offer a different approach by adopting the five levels of negotiation behavior by Thompson et al. (2010). Using the approach, we could categorize the previous studies included in this review, even though they come from diverse research landscapes and topics—particularly allowing the emerging research of automated negotiation agents to be a part of this review alongside research on human negotiation behavior.

2. STRATEGIC BEHAVIOR IN NEGOTIATION

2.1. Defining strategic behavior

Behavior in negotiation has always been the central question in preferential decision-making research. The definition of behavior itself could be expanded into various criteria. However, in this study, we use the term “strategic negotiation behavior" to limit our observation. We begin by describing "strategic" as any act—either deliberate or not—that could impact the outcome and goal of a negotiation process (Kilduff et al., 2010). The most common categorization of strategic behavior is to group it as an integrative or distributive tactic (Saorín-Iborra & Cubillo, 2019).

From a temporal point of view, the negotiator is required to adapt their strategic behavior to accommodate the ticking clock of the negotiation deadline. Adair and Brett (2005) compared this phenomenon to a choreography where the negotiator must dance through the rhythm of multi-party interaction to reach desirable outcomes. Therefore, a resourceful negotiator should also consider their own cognition, emotion, and motivation to continuously meet the adaptability demand (Thompson et al., 2010). Despite the seemingly endless demands and pressure within and between negotiators, Cabantous and Gond (2011) pointed out the need to keep learning from the real-life manifestation of rationality in decision makers' behavior that they called “praxis”.

2.2. Categories of strategic behavior

We use the five levels of examination proposed by Thompson et al. (2010) for the negotiation behavior observed in the articles included in this study. These five levels consist of intrapersonal, interpersonal, group, organizational, and virtual systems. The intrapersonal

system describes how the inner process of the negotiator is both influencing and being influenced by the negotiation process. As the lowest system, the intrapersonal system is mainly concerned with how emotion and power affect the negotiation process. The emotion part has been regarded as the core inner process of how humans interact with their environment, and in this case how we correspond to each other in negotiation (Forgas, 2017). Studies about the inner emotional process of negotiators have been focused on the positive and negative valence effect on judgment (Lerner & Keltner, 2000; Tiedens & Linton, 2001; Angie et al., 2011). Tan and Forgas (2010) have also pointed out how mood could alter the choice of strategy in negotiation.

Another central part of intrapersonal processing in negotiation is how the negotiator's structural power would bring out different strategies for them. Slabu and Guinote's (2010) study indicated how powerful individuals could focus directly on goal-relevant behavior compared to their less powerful counterpart who needs to balance it with other non-goal-relevant behavior during the process they could attain their desired outcome. Power could even influence the effect of the emotional process such that powerless individuals do not have the privilege to listen to their emotions during negotiation (Elfenbein et al., 2008). Besides emotion and power, bounded awareness has also been regarded as a vital factor in determining negotiation outcomes through the information-seeking process (Chugh & Bazerman, 2007).

The interpersonal system deals with how the interaction between parties involved shapes how the negotiation progresses. As it is concerned with how negotiators interact with each other, most of the studies done in this regard are about communication. This has drawn the necessity of method exploration to find novel ways to capture the communication dynamics between negotiating parties (Koeszegi & Vetschera, 2010). Miles (2013) thus pointed out that even a simple communication activity such as questioning is a legitimate negotiation tactic that could help the negotiator reach their goals. Some studies focus on the impact of emotional cues on the negotiation process (Sinaceur et al., 2011; Lelieveld et al., 2013; Filzmoser et al., 2016; Tng & Au, 2014; Wang et al., 2012). In the end, the interpersonal process has always been about bargaining between intertwining goals and preferences of parties involved (Brown & Curhan, 2012; Olekalns & Smith, 2007), often drawing the need to adapt their behavior over time (Olekalns & Weingart, 2008).

The group system explains the social system beyond the negotiators' interaction; that is, how each represents their socio-cultural upbringing. The group system covers the exploration of the theme of stratification (Fiske, 2010; Mead & Maner, 2012), intercultural vs. intracultural (Adair et al., 2009), and how group identity overrides personal goals (De Cremer & van Dijk, 2002). Many studies in this system demonstrate how culture could influence other factors in the negotiation process, such as cooperation level (De Cremer et al., 2008), information sharing (Adair, 2008), and emotional display (Kopelman & Rosette, 2008). The emotional display itself has been a subject of observation that has detached itself from cultural context, considering it as a separate interpersonal strategy in negotiation (Van Kleef, 2010; Van Kleef et al., 2010; Van Kleef et al., 2011).

The organizational system sees the negotiation process as a part of a marketplace of negotiators. The parallelism of this system with a marketplace has it entangled with a time variable. Hence, the common motif of the organizational system is the reputation of a negotiator. Curhan et al. (2010) demonstrated this side of the negotiation process using two rounds of negotiation, showing how the negotiators felt more positive about each other after the first interaction.

The virtual system relates the negotiation process from where it is happening and how the medium affects the negotiation process. Considering that this system is centered on the medium of the negotiation process, the study around this topic emphasizes the use of technology in negotiation. Most of the studies are conducted to compare negotiator performance in face-to-face vs. within an electronic system (Geiger, 2020; Geiger & Laubert, 2018) or between one electronic system and the other (Scheck et al., 2008). The computer-mediated negotiation process has been proven to affect how negotiators present themselves (Forgas & Tan, 2013). Therefore, the virtual system's primary asset is to help the limited capability of human cognition, so it should excel at all three forms of negotiation support: communication, analytical, and behavioral (Vetschera et al., 2013).

3. METHODOLOGY

The exploration and analysis process of the literature review study has been described by Snyder (2019). Based on that, the literature review as a research methodology consists of designing the research and method of inquiry, conducting a rigorous process of inclusion and exclusion of relevant articles, data abstraction and analysis, and finally writing the review itself.

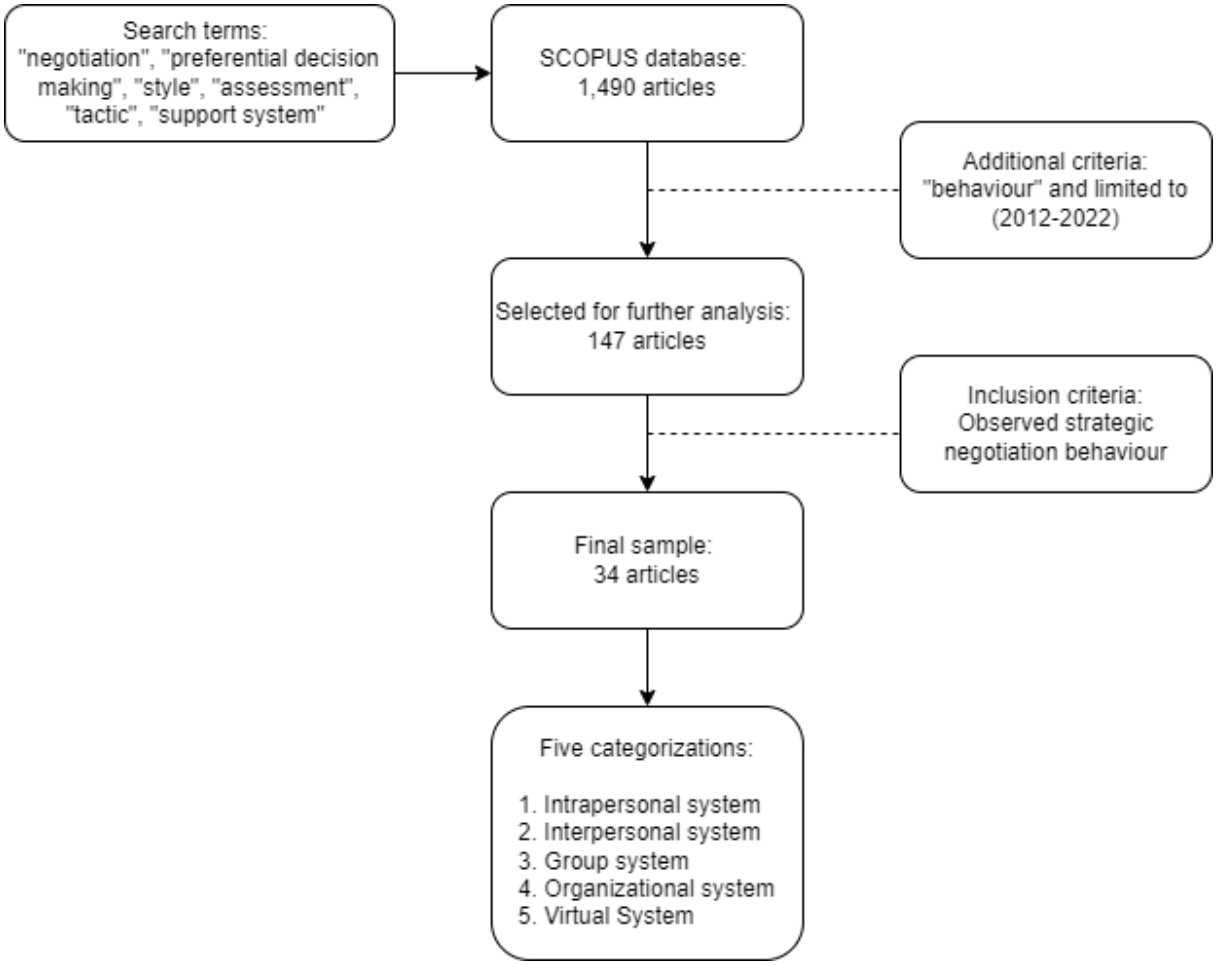

Figure 1. Search strategy to identify articles on strategic negotiation behavior

Considering the objectives of this research, that is, reviewing and conceptualizing strategic behavior in the negotiation process, several search terms are included in the screening process of the relevant process. The search used the SCOPUS database for keywords found in the

articles' title, abstract, and keyword. We use “preferential decision making” and "negotiation" as the primary inclusion keywords for the articles. We expand the keywords to include keywords that indicate an assessment process, such as "assessment", "tactic", and "support system". The last inclusion indicator was "behavior”. We limited the search to include only articles from the last ten years (2012-2022).

Using these search terms, we came up with 147 articles. These articles are further screened for only articles that focus on assessing the actual strategic behavior of actors in the negotiation process. Articles from book chapters, conferences, and the ones the authors do not have access were excluded from the inquiry. The final sample of the articles included in the study consists of thirty-four articles.

4. RESULT

4.1. Intrapersonal system

Thompson et al. (2010) have described the five negotiation systems that are more aligned with the descriptive side of the process rather than the normative one. Through these five systems, the negotiator is seen as having behavior that departs from the rigid economic model. The five systems are intrapersonal, interpersonal, group, organizational, and virtual. Each of these five systems has been useful in categorizing the articles included in this study.

In the first system, the intrapersonal system, the negotiation process is recognized as first and foremost influenced by the inner process of the negotiator themselves (Thompson et al., 2010). Within this system, the negotiator is described as influenced by their own power, gender, and affect. Since the included articles also cover non-human (agent) negotiators, it has a broader range of inner processes within the negotiator.

The studies observed that the inner process of human negotiator is recognized as the affective part of an intrapersonal system. Baas et al. (2019) examined whether people being cornered in a high social threat situation would be more likely to devise a malevolent solution to the problem. This is done by inducing respondents into a high/low threat negotiation using Game Theory and measuring how many malevolent solutions the respondents could come up with. The study finds that social threat indeed induces people to devise novel malevolent ways to solve their problems. However, it does not affect the number of collaborative approaches chosen overall.

The intrapersonal system of an automated negotiating agent is mainly concerned with how an agent could generate its own concession point. Jonker and Aydoğan (2021) The study built the negotiating agent Deniz using Greedy Concession Algorithm (GCA) to generate the utility function of the agent, combining it with Tit-for-Tat behavior so that the agent is not exploited in its concession strategy.

Chen and Weiss (2015) developed an adaptive concession-making mechanism based on two variables: the agent’s estimated reservation point and the expectation of the opponent’s maximum concession point. The agent could then create a counter-offer mechanism based on the decision to break the deal or not based on the two prior analyses.

Another study has tried to build an agent without an individual's preferences. However, it has been implemented with deep learning as a mechanism to build an agent that could develop itself into either a selfish agent or a prosocial agent based on the opponent’s behavior it is trained with (Sunder et al., 2018).

Kröhling et al. (2019), on the other hand, used another instance of their agent (Self-play) to build a basic understanding of the negotiation process for it. The Self-play process offers a

different angle on how the agent could learn how to conduct successful negotiation, which mirrors how humans conduct the learning process of comparing their own ideal in a particular situation and their opponent's behavior.

4.2. Intrerpersonal system

The following system described in (Thompson et al., 2010) is the interpersonal system. This system represents the side of negotiation dependent on the opposing party's presence and behavior. One of the core foundations of the interpersonal system during negotiation is how the negotiator can balance their task of creating value with claiming value. This has been done extensively in the negotiating agent studies as they are commonly built as non-communicating agents and hence need to predict their opponents' goals. There are diverse opponents' goal prediction model that is implemented in the negotiating agent, such as OMAC* framework opponents modeling, concession making, and counter-offer response (Chen & Weiss, 2015), boosting method and Pareto front (Matsune & Fujita, 2018), ABiNeS (Acceptance-threshold, Next-bid, Acceptance-condition, and Termination-condition) (Hao et al., 2014), hybrid approach (Mansour, 2020), learning as a nonlinear least-squares problem (Sundarraj & Shi, 2012), and Adaptive Probabilistic Behavioral Learning System (Rajavel & Thangarathanam, 2016).

Table 1. Studies observing strategic behavior in human negotiator

No.	Author	Category	Type of study	Content
1.	Schmidt and Cross (2014)	Interpersonal	Experiment, questionnaire	Rapport
2.	Akpinar et al. (2017)	Interpersonal	Textual sentiment analysis	Emotional cues, culture
3.	Baas et al. (2019)	Intrapersonal	Experiment	High/low social threat
4.	Aaldering et al. (2020)	Group	Experiment	Unethical tactic
5.	Bennett et al. (2015)	Interpersonal	Survey	Deadline pressure, pre-negotiation goals and limit
6.	Bolkan and Goodboy (2021)	Interpersonal	Experiment	Monetary value as goals
7.	Bechter and Swierczek (2015)	Group	Digital storytelling	Size of deal
8.	Aykac et al. (2017)	Group	Digital experiment, textual analysis	Active or passive omission, monetary incentives
9.	Essa et al. (2018)	Interpersonal	Computerized negotiation game	TCO information
10.	Gettinger and Koeszegi (2016)	Virtual	Computerized support system (Inspire) experiment	Pareto efficient
11.	Preuss and van der Wijst (2017)	Interpersonal	online negotiation experiment	BATNA, negotiation profile
12.	Gettinger and Koeszegi (2015)	Interpersonal	Experiment	Emotional expression, emoticon
13.	Parlamis et al. (2020)	Interpersonal	Experiment	Competency pressure
14.	Hagemann et al. (2019)	Interpersonal, Organizational	Archival study	Voting position and statements
15.	Lu et al. (2018)	Organizational	Survey and experiment	Negotiation style
16.	Schoop et al. (2014)	Virtual	Electronic negotiation experiment	‘good’ communication
17.	Koeman et al. (2019)	Virtual	Pocket Negotiator system for negotiation experiment	Pareto optimum diagram
18.	Carbonneau et al. (2016)	Virtual	Digital negotiation experiment (Inspire)	Quantifying the concession behavior

The perspective of negotiating agent research also demands that the social and economic foundations be balanced. Sunder et al. (2018) pointed out that prosocial behavior is the optimal way to approach the deal if and only if the agent can detect and punish selfish behavior in others. This is also in line with how human nature behaves in this situation, mirroring the data of the meta-agent; that adaptability also means that the meta-agent could exploit prosocial behavior. On the flip side, Lopez-Carmona et al. (2012) developed a negotiating agent that could avoid being trapped in a high price of anarchy, having the outcome with both low individual and social welfare.

Cao et al. (2021) have tried to implement this bounded rationality in negotiating agents so that it can be better used in human-to-computer negotiation process; thus, the negotiating agent should predict how humans would likely behave compared to a computer. The agent is implemented with the 'irrationality' of the human negotiator by mirroring how human does not attempt to predict opponents' utility, but only concern themselves with their aspiration. This could also mean that they could be over-optimistic about their chances to gain a higher payoff during the negotiation and should critically re-evaluate their aspiration and optimism. Hence, the framework is built on two theories: Game Theory and Hope Theory, representing the rational and optimistic sides of human negotiators, respectively.

The negotiation process frequently requires improvisation from the negotiator. One of the most common factors influencing this is the time pressure of negotiation. Bennett et al. (2015) found that the CFO of companies would concede more than the auditor and choose less rigid negotiation tactics than the auditor. However, the strict tactic used by the auditor is only available whenever the time deadline is still abundant and will diminish over time; therefore, in the face of tight deadlines, the auditor will not employ strict tactics.

The time pressure of negotiation has been represented in the negotiating agent research by implementing a hybrid strategy. Mansour (2020) developed the hybrid strategy to consider both the behavior of its opponents (linear, Boulware, and conceder) and the opponents' offer to build its own offer. This is proven to gain more utility value than the time-dependent tactics as it does not merely concede on the reservation value, but also considers the offer that the opponents would more likely accept without conceding too much. This is also implemented in the form of eagerness to mirror the preference of human negotiators, that would be more eager to close a deal whenever they feel that it has been a long since they struck a deal in the past (Z. Wang & Wang, 2013).

The time factor could also be used to determine the negotiation style of a negotiator. Preuss and van der Wijst (2017) built the negotiation style of their respondents on how integrative or distributive the negotiator's behavior was during each phase of the negotiation process. Using this approach of looking at how negotiators change their tactics over time, the study could develop five distinct negotiation styles.

Another way a negotiator could improve their negotiation tactics is by changing their approach based on their opponent’s behavior. Fujita (2018) developed an adaptive agent that assesses the opponent's behavior based on the Thomas Kilmann Conflict Mode (TKI) instruments, measuring the cooperativeness of the opponents using opponents' recent offers to the mean of past offers and the assertiveness using how similar the recent offer is to the past offers. The agent also searched for the Pareto optimal bid by using the Genetic Algorithm and comparing the recent opponents' bid to the first bid, assuming that the first offer is most possibly the best option. On the other hand, Rajavel and Thangarathanam (2016) built an adaptive negotiating agent in the cloud computing market, improving the fixed learning capability of previous studies on negotiating agents.

Table 2. Studies observing strategic behavior in automated negotiating agent

No.	Author	Category	Type of study	Content
1.	Sanchez-Anguix et al. (2021)	Organizational	Social negotiating agent	social value index, agent society
2.	Fujita (2018)	Interpersonal	Multi-Times Bilateral Closed Negotiations	TKI Conflict Mode, cooperativeness
3.	Jonker and Aydogan (2018)	Intrapersonal, Interpersonal	Negotiating agent as the basis for building a negotiation support system for human	Human perception of the agent, Tit-for-Tat behavior, Pareto Optimal frontier
4.	Sunder et al. (2018)	Intrapersonal, Interpersonal	Prosocial vs. selfish agent	Rewards and punishments
5.	Chen and Weiss (2015)	Intrapersonal, Interpersonal	Opponents modeling framework	Gaussian processes (trend prediction)
6.	Kröhling et al. (2019)	Intrapersonal	Environmental awareness	
7.	Hofstede et al. (2012)	Group	Cultural negotiating agent	concession factor, negotiation speed, acceptable utility gap, impatience
8.	Matsune and Fujita (2018)	Intrapersonal, Interpersonal	Adaptive negotiating agent	Stacked Alternating Offers Protocol (SAOP)
9.	Hao et al. (2014)	Intrapersonal, Interpersonal	Adaptive negotiating agent	Acceptance-threshold, Next-bid, Acceptance-condition, Termination-condition
10.	Mansour (2020)	Interpersonal	Adaptive negotiating agent	Hybrid approach that modifies time-dependent tactics
11.	Wang and Wang (2013)	Organizational	Negotiating agent for a smart building (energy supply)	Eagerness, role switching (buyer-seller)
12.	Sundarraj and Shi (2011)	Interpersonal	Testing several learning methods of the opponents modeling process	Convergence Rate, Sum of Squared Error in Future Turn, actual utility, utility improvement.
13.	Lopez-Carmona et al. (2012)	Interpersonal	Avoiding high price of anarchy	Q-based simulated annealing (SA-Q), maximum weight independent sets with a Q-based tournament selection (MWIS-Q)
14.	Rajavel and Thangarathanam (2016).	Interpersonal, Organizational	Adaptive negotiating agent in the cloud computing market	Multi-stage Markov decision problem,
15.	Aydoğan et al. (2021)	Virtual	Humanized negotiating robot	Robot with human gesture, human perception of the robot
16.	Cao et al. (2021)	Interpersonal	Negotiating agent that accommodates human opponent	Opponent utility prediction

There is also the side of negotiation that goes beyond economic gain but is grounded on the subjective value of the negotiator. Studies about this side of negotiation commonly observed how negotiators concerned themselves with how the negotiation process could align with their perception of self, others, and the process itself. Parlamis et al. (2020) observed the affective

part of negotiation through the lens of competency pressure and the fear of appearing incompetent (FIA) in negotiation that would, in turn, affect the behavior and tactic of the negotiator. The study found that FIA is negatively related to competitive negotiation tactics as it triggers the flee response to avoid negative consequences. However, when negotiators with high FIA see that the threat of appearing incompetent is unavoidable, they would tend to use competitive tactics.

Bennett et al. (2015) found that in the negotiation process, while the focus of their study has cemented the fact that the CFO and auditor have different negotiation strategies and goals, an auditor would still consider compromising their negotiation goals because of another preference, that is maintaining an excellent auditor-client relationship.

Hagemann et al. (2019) reported similar results from political negotiations. They found that European Union council members approach an issue strategically to not severe their good relationship with another country's representative regardless of how their constituents view of EU.

Considering that a negotiation is done in the first place because one party needs to collaborate with another party to solve an issue, trust is vital to a successful negotiation. Bolkan and Goodboy (2021) used the best alternative to a negotiated agreement' (BATNA) as the central argument on how a negotiator could reap the benefit of revealing it during the negotiation process. The idea is that revealing BATNA could make the threat of leaving the agreement credible but, on the other hand, diminish the ambiguous factor of the alternatives. The study found that the negotiator who reveals their BATNA pays more than their counterparts that do not do the same, possibly because their alternatives become transparent. Their opponents can directly offer a little less than their alternatives.

On the flip side, Essa et al. (2018) focused their study on the role of uncertainty using the buyer-seller interaction context and found that it makes negotiators use distributive tactics more than integrative. These effects can be moderated by sharing refined accounting information, such as TCO.

Related to trust, the integrative outcome of negotiation could be helped by a good relationship among the party involved. This has been demonstrated by Essa et al. (2018), who used three specific cases in the same experimental concept and found that negotiators tend to use more integrative approaches as they become more familiar with each other.

On the other hand, Schmidt and Cross (2014) found that a newly introduced auditor would make client management more conceding and less contending to establish rapport.

4.3. Group system

Negotiation sometimes deals with a more extensive system than the individual inner system and among the party involved. This system could be represented in the group system that contains social dynamics beyond the parties involved in the negotiation process. Several studies approach this system using the lens of constituency during negotiation. Aaldering et al. (2020) studied how constituency would pressure their representatives into a more competitive approach to negotiation. This competitiveness would be further induced to include unethical behavior, especially in the constituency that condones unethical behavior. Their result found that the constituency makes the representative choose an unethical approach to the negotiation process, particularly if the constituency condones such behavior. They also found that even if the constituency favors a competitive approach, the representative will be more likely to choose unethical behavior. Aykac et al. (2017) observe

the same phenomenon in team negotiators, constructing unethical negotiation conduct in the form of active or passive omission, compared to the individual negotiator.

Another form of group system is the cultural upbringing of the negotiator. Bechter and Swierczek (2015) observed how the cultural intelligence (CQ) and the negotiator's awareness of the cultural distance (CD) happening in their negotiation process would help them in reaching collaborative goals in intercultural negotiation. They found that the better the CQ and the awareness of CD, the better the negotiator would fare compared to their counterparts. It is also found that the CQ and the awareness of CD should also be followed by flexibility in negotiation style to adapt to the cultural difference between them and their opponents.

Culture has also been implemented in negotiating agent study. Hofstede et al. (2012) built a negotiating agent that has been implemented with Hofstede's Five Dimensions of Culture as part of their preferences. The agent is developed by using the concession factor, negotiation speed, acceptable utility gap, impatience, and utility function as the agent's primary preference for accepting an offer. The cultural factor is implemented by assessing how each of the five dimensions will impact the main preferences (e.g., a collectivistic agent would get an increase in its concession factor and lower the impatience towards the ingroup agent). The study found that the agent is modeled in line with expected cultural behavior found qualitatively in other explorative studies.

4.4. Organizational system

An even bigger system than the group system is the organizational system. This system encompasses the negotiation as a market of negotiators. This has been demonstrated in the political field. Hagemann et al. (2019) studied the voting position (yes, no, or abstain) and voting statements of European Union council members as the predictor of how certain members' national political situation is undergoing. They found that national political condition has a say in how their EU council members will behave in the voting process, mainly to be still the negotiator for their country, among others available in the 'political market'.

The organizational system also deals with how the negotiation history would shape the negotiator’s behavior over time. Lu et al. (2017) used four instruments to measure the perception of past negotiations. The instruments were built around the subjective value concept to give depth and category to negotiators' evaluation of their past negotiation outcomes. The study then related the past negotiation outcome to the behavior style of the negotiators (integrating, compromising, obliging, and avoiding).

The organizational system in negotiating agent studies is done in the context of agent society. Sanchez-Anguix et al. (2021) developed a negotiating agent that has social concern assuming that in an agent society where the negotiation process occurs continuously over time, social reputation would be considered, particularly as how other agents would consider opening a deal with it or not. Sunder et al. (2018) also mentioned that adaptability in agent behavior could only be done over time after learning the pattern of the opponent's tactics and the reward of changing behavior.

Another outlook on negotiating agents in an organizational system is done by Wang and Wang (2013) by developing a negotiating agent for a smart building that must negotiate for energy supply based on the building's energy needs and surplus. The case of a smart building is interesting because the negotiating agent is built to have both seller and buyer qualifications because, in the context of energy efficiency, the building itself needs to be dynamic in searching for energy supply whenever it is lacking and to switch to the seller role whenever it has a surplus of energy in the market.

4.5. Virtual system

The last system covers how the medium of negotiation could alter the negotiator's behavior. Akpinar et al. (2017) examined how textual e-negotiation could limit how negotiators could express themselves, especially in an intercultural context. They found that intercultural negotiation has a less emotional cue, suggesting that negotiators are more cautious in their message, as they are dealing with opponents that they are not so familiar. Gettinger et al. (2016) deal with this limitation in textual e-negotiation by introducing emoticons in their negotiation support system. The result found that using emoticons helped them reach integrative agreement, and the negotiator who used them needed less use of words in the text. The study also observes that synchronous negotiation triggers more use of negative emotions, in contrast to how asynchronous negotiation triggers more use of positive emotions. Schoop et al. (2014) expanded the exploration of the negotiation support system used in the communication process. This is done by recording the negotiator's preferences and providing the platform to communicate intensively with each other. The study found that the support system helps negotiators clearly communicate their intention.

A negotiation support system could also help generate a better strategy for the user. Gettinger and Koeszegi (2015) developed a computerized support system to help negotiators determine whether their initial agreement is a Pareto efficient or not. Using this support, the system also enables them to renegotiate a post-settlement process that could increase their payoff. Koeman et al. (2021) built a negotiation support system that could assist the user by explaining their opponents' strategy based on the bids' pattern. All of this was done by reading the pattern of opponents' behavior by looking at the size of the move and their concession in a Pareto optimal diagram.

Considering the future of the negotiation process, the negotiation research landscape has reached the point of negotiating robots. Aydogan et al. (2022) studied how a robot that could mimic human gestures would fare against its opponents. This study employed the common time-dependent and behavior-dependent strategy for Jennifer, the negotiating robot, to dictate how it would exhibit specific behavior (gesture). The gestures used in this study are Offended, Unpleasant, Neutral, Pleasant, Mild, Satisfied, and Stressed. The study found that Jennifer could outperform human negotiators when it is employing a behavior-dependent strategy. However, it is perceived as easier to negotiate with when it employs time-dependent behavior.

5. DISCUSSION

5.1. Human and Computer Negotiation

The apparent pattern of the studies included in this study is that it is almost split by half, the ones who observed human negotiator behavior and developed the automated negotiating agent. The automated negotiating agent itself has been primarily studied to help human negotiators reach a better deal or even replace the human's role entirely. This objective is apparent in a study such as Hofstede et al. (2012), which implemented Hofstede's Five Dimensions of Culture as part of the negotiating agent’s preferences. Other studies, such as Aydogan et al. (2022), developed a negotiating robot that could mimic human gestures in negotiation.

There is also a stark distinction between the approach of studies of human strategic behavior and that of the negotiating agent. One prime example is the ability to communicate their preferences. Often a negotiating agent is built without the ability to communicate (Fujita, 2018), distinguishing from real-life human negotiations that most likely state their intention with the possibility of it being bluff or deceit. However, the lack of communication has

pushed researchers to develop the ability to model and predict opponents' goals and preferences into the agents based on the sequential offers made by the opponents. Those studies created a diverse mode of understanding opponents' preferences, such as through a combination of trend analysis and trend prediction (Chen & Weiss, 2015), boosting based on the least-squares method and nonlinear programming (Matsune & Fujita, 2018), learning algorithm (Sundarraj & Shi, 2012), and Behavioral Inference Engine (Rajavel & Thangarathanam, 2016).

The human negotiation behavior and the automated negotiating agent could also serve as the two research fields that learn from each other to create better negotiation processes in everyday life. Carbonneau et al. (2014) developed the model for quantifying the concession behavior of human negotiators, whether they exhibit concession crossover across multiple issues or not. The behavior was observed based on the linear or concave preference of the participant and whether their preference changed over time.

On the other hand, Cao et al. (2021) showed that those distinctions between human and agent negotiators could be accommodated using Game Theory and Hope Theory. Hope Theory is used in the Offer Prediction phase, while Game Theory is used in the Offer Making phase. The combination assumes that the 'irrationality' of human negotiator compared to agent (computer) negotiator is that human does not attempt to predict opponents' utility and only concerns themselves with their aspiration. This could also mean they could be over-optimistic about their chances to gain a higher payoff during the negotiation and should critically re-evaluate their aspiration and optimism.

5.2. Negotiation strategic styles and tactics assessment

One of the essential points in reviewing the literature on strategic behavior is how past studies observe and assess them related to the goals and preferences of the negotiator. The standard measure of negotiation strategy is observing a negotiator's contending vs. conceding level and to determine whether they are more likely to adopt an integrative or distributive approach to the problem. Schmidt and Cross (2014) employed a distributive negotiation strategies framework in an experimental setting that differentiates negotiation strategies based on the conceding vs. contending level of the negotiator's behavior. Essa et al. (2018) examined the role of payoff uncertainty in influencing negotiators to use a distributive or integrative approach. These effects can be moderated by the sharing process of TCO information. Also, in this study, three distinct cases were used in the same experimental concept and it was found that over time, negotiators would tend to use a more integrative approach as they become more familiar with each other. Preuss and van der Wijst (2017) construct the negotiation style of their respondents from how integrative/distributive the negotiator's behavior is during each phase of the negotiation process. Using this approach of looking at how negotiators change their tactics over time, the study could develop five distinct negotiation styles. Aside from this negotiation style observation, the study also correlated the style with how effective and efficient each style proceeds with their agreement.

The assessment of whether the negotiation strategy is ethical or not is also present in several studies. Aaldering et al. (2020) observed the unethical conduct of negotiators that have an obligation to accommodate their constituents. However, the study pointed out the need to distinguish between actual unethical behavior (e.g., misrepresenting information) and standard competitive behavior. Aykac et al. (2017) have done similar research. However, their constituency study takes on how individual negotiators would take the unethical behavior as representatives and offers more on how it pushes the representative to unethical behavior, compared to this study that focuses more on the payoff of the deal (whether it is better doing

negotiation as a team and having an unethical behavior) and the unethical behavior as the mediating variable.

Other studies have come up with a novel way to assess the strategic behavior in the negotiation process. Bennett et al. (2015) observed the outcome of their respondent's behavior by determining the focus on pre-negotiation goals and limits of both parties and then comparing it with their behavior in the actual negotiation. Bechter and Swierczek (2015) and Lu et al. (2017) both observed the outcome of their respondents' past negotiations, whereas the latter used a unique digital storytelling tool to get around the privacy issue posed by revealing past negotiation details. BATNA has been used by Bolkan and Goodboy (2021) and Preuss and van der Wijst (2017) in a stark approach. Bolkan and Goodboy (2021) used the BATNA itself as the strategy that could be used by the negotiator, relating them to the relative payoff of the negotiation outcome. In comparison, Preuss and van der Wijst (2017) used the BATNA as the measurement for assessing whether the negotiation outcome is good enough for the parties involved or not.

Akpinar et al. (2017) also observed the initiation behavior in negotiation, besides their emotional cue analysis. Their examination of the initiation behavior found that the initiating negotiation lowers the risk of low payoff. Hagemann et al. (2019) have carried out an archival study on the correlation of the national political condition of EU council members to their negotiation behavior during the voting process. The study used the members' historical data on their voting position and voting statements, each reflecting their interest as an EU members and as their country representatives. The strategic behavior captured in Baas et al. (2019) is in the form of a malevolent tactic in response to high social threats. One point that can be looked at is how the study sets its approach on creativity, therefore, does not need to limit the choices that respondents can take.

5.3. Interplay between system

Categorizing negotiation behavior based on the observation level offers a double purpose. Besides the apparent intention of putting everything on the order of system magnitude, it could also provide us with the emerging interplay among the systems. Given that the basis of negotiation is a multi-party interaction, the interpersonal system seems to be at the core of this interplay.

In its lower system, which is intrapersonal, the system stores the inner inclination of the negotiator that could emerge at the interpersonal level (Baas et al., 2019; Sunder et al., 2018). The group system can affect the interpersonal system through culture (Bechter & Swierczek, 2015; Hofstede et al., 2012) and constituency (Aaldering et al., 2020; Aykac et al., 2017). The organizational level that deals mainly with a reputation could alter how the negotiator sees, not only the short-term goals of making the best deal out of a negotiation process, but also the long-term goal of maintaining a good image among their peers.(Hagemann et al., 2019; Lu et al., 2017; Sanchez-Anguix et al., 2021). Meanwhile, the virtual system that has been developed specifically to help the interpersonal process in negotiations has various applications found in this study. Some of them have been used as a facilitator for renegotiating a post-settlement deal (Gettinger et al., 2016), communication support (Akpinar et al., 2017; Schoop et al., 2014), and explaining the opponent's strategy (Koeman et al., 2021).

There are also some determinants that arise in several systems, raising a point of their importance in the negotiation process as a whole. Emotion has shown its importance for the inner process of negotiator (Baas et al., 2019), as well as being a legitimate strategy for expressing it during interaction (Akpinar et al., 2017; Gettinger & Koeszegi, 2015). It is also

observed as a factor that could sway the negotiator's behavior (Parlamis et al., 2020). The time factor also appears in more than one system. Time as a factor emerges in multiple systems either in the form of inner pressure during negotiation (Carbonneau et al., 2014; Bennett et al., 2015; Preuss & van der Wijst, 2017) or through a long-term process of evaluation among negotiation events (Essa et al., 2018; Sanchez-Anguix et al., 2021; Hagemann et al., 2019; Lu et al., 2017; Z. Wang & Wang, 2013)

6. CONCLUSIONS

This study has reviewed the scientific articles that observed the strategic behavior in the negotiation process in the last decade. We have classified them according to the five systems of behavioral observation by Thompson et al. (2010). The apparent pattern of inclusion in this review is that the articles are almost split into half by the object of observation, either a human negotiator or an automated negotiating agent. This distinction could also be a two-way learning process between a human negotiator and an automated negotiating agent. From this mutual learning, it is hoped that human negotiators could benefit from the manufacturing process of rationality in negotiating agent studies. The negotiating agent could be further developed and applied seamlessly in everyday life.

From the categorizing process, we came up with a diverse study that observed negotiation behavior at each level. We also see the emerging interplay between systems, with the interpersonal system acting as the core system of the multi-party interaction process. This raised the point that future studies in negotiation behavior should consider the observation system-level employed in their study. The review also pointed out the various methods and tools that the negotiation researcher has used to assess the strategic behavior of the negotiator.

This research also has implications for the practical area of negotiation. This review should point out that the teaching of an ideal negotiation process should progress to incorporating automated negotiation agent. This is important as we have previously stated before that the development of negotaiting agent would be the bridge for a two-way learning process between computerized negotiation support system and face-to-face interaction.

7. LIMITATIONS AND FUTURE RESEARCH DIRECTION

Given that research that observes negotiation comes from diverse scientific backgrounds, the authors have limited the search process to come up with a focused review. However, this could exclude the studies that employed different and unique ways to capture strategic behavior in negotiation, particularly in research area that is more distant from the economic and management field, but still holds insightful analysis that could enrich the negotiation behavior research landscape. We suggest that future research could come up with novel ways to incorporate more diverse research field in its analysis.

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