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PRAGMATIC STRATEGY CLASSIFICATION IN ENGLISH BUSINESS NEGOTIATION USING A RULE-BASED APPROACH

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ABSTRACT
English business negotiation requires not only grammatical accuracy but also pragmatic competence, as strategies such as directness, politeness, mitigation, and hedging determine how offers and requests are received. Current pedagogical practices, which rely on role-plays and simulations, often provide only general evaluations and lack detailed feedback on pragmatic strategies. This study proposes a rule-based approach to classify pragmatic strategies in student negotiation transcripts. Rules were formulated using both pragmatic theory and empirical observation, then represented in First-Order Logic (FOL) for computational implementation. The dataset consisted of 1,200 utterances from simulated negotiations, which were manually annotated by three experts with high inter-annotator agreement ($\kappa = 0.82$). The rule-based system classified each utterance deterministically into one of the four strategies based on lexical and grammatical markers. Results show that directness dominated (51.7%), followed by politeness (30.8%), while mitigation (11.7%) and hedging (5.8%) were used less frequently. System evaluation against manual annotation yielded strong performance, with a macro F1-score of 0.81. While effective in detecting directness and politeness, the system was less optimal for mitigation and hedging due to their implicit variability. These findings suggest that students favor straightforward expressions and underuse more nuanced strategies. The study concludes that pragmatic instruction should place greater emphasis on mitigation and hedging, while the rule-based system can serve as an automatic feedback tool to support pragmatic learning in English for Business Negotiation.

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I. INTRODUCTION

ENGLISH business negotiation has become an increasingly essential skill for students of business administration. In global interactions, English functions as a lingua franca, meaning that the ability to communicate appropriately often determines the success of cooperation, contracts, and transactions [1], [2]. The effectiveness of a negotiation is not solely determined by grammar or vocabulary, but also by pragmatic strategies that render utterances socially appropriate. Strategies such as directness, politeness, mitigation, and hedging are crucial in maintaining interpersonal relationships while simultaneously pursuing agreement [3], [4], [5], [6].

Pedagogical practices in English for Business Negotiation commonly employ instructional materials, role-play activities, or online simulations [7], [8]. While these practices provide students with opportunities to experiment with various communicative approaches, the mechanisms of evaluation remain rather general, often limited to judgments of whether interactions are polite or impolite. Students rarely receive feedback that specifies which pragmatic strategies are successful and which require improvement. Consequently, they may continue to use strategies that are less effective without realizing it. Manual identification of pragmatic strategies by instructors is also time-consuming and difficult to maintain consistently, particularly when a dialogue consists of hundreds of utterances [9], [10].

This study proposes a rule-based approach to analyzing student negotiation transcripts. Each utterance is categorized into one of four pragmatic strategies—directness, politeness, mitigation, or hedging—on the basis of lexical and grammatical markers defined in a codebook [11], [12], [13]. Lexical markers include the use of politeness indicators such as “please”, “kindly”, or “would you”. Grammatical markers include interrogative sentence structures, passive constructions, or the softening of meaning through modal expressions such as could or

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might. The rules are formalized using First-Order Logic (FOL) [14], [15], which enables the development of a system capable of performing pragmatic strategy identification automatically across all utterances in a dialogue [16], [17].

Previous studies have largely emphasized explicit practice such as role-play or online simulations, with evaluations that are predominantly manual and descriptive. While such assessments can foster pragmatic awareness, they provide little detail regarding the specific strategies employed in each utterance. Furthermore, technology has often been positioned more as a medium for practice than as an analytical instrument. This study addresses that gap by applying rule-based classification to student negotiation data. The approach yields evaluations that are faster, more consistent, and more detailed with respect to the distribution of pragmatic strategies in negotiation.

This article is organized as follows. Section Two describes the proposed method, including the problem definition and the formulation of rule-based classification. Section Three presents the results of pragmatic strategy classification along with detailed discussion, including distribution, illustrative examples, per-strategy analysis, comparison with manual annotation, error analysis, and pedagogical implications. The final section concludes with the main findings, limitations, and recommendations for further research.

II. Research Method

A. Problem Definition

This study proposes a rule-based approach to identify pragmatic strategies in English business negotiation discourse. The rationale for choosing this approach is grounded in two main needs. First, language learning in the field of English for Specific Purposes (ESP) requires an evaluation mechanism that not only assesses grammatical accuracy but also pragmatic competence. In the context of negotiation, strategies such as directness, politeness, mitigation, and hedging are crucial in determining how an offer or request is received. Conventional evaluation, however, tends to provide only general feedback—such as “too direct” or “not polite”—without specifying which strategies are being employed.

Second, manual analysis of negotiation transcripts is time-consuming and prone to inconsistency. A single utterance may be interpreted differently by different annotators, which lowers the reliability of the analysis. Therefore, a system is required that can classify pragmatic strategies in a deterministic, transparent, and consistent manner. A rule-based system addresses this need because each classification decision can be directly traced back to explicit rules that underlie it [17], [18], [19], [20].

Formally, the problem is formulated as a classification function at the utterance level. Each conversation is represented as a set of utterances $U = \{u_1, u_2, \dots, u_n\}$. The system then maps each u_i to one of the four pragmatic strategies, $S = \{directness, politeness, mitigation, hedging\}$ against a set of predefined rules. The classification function $f: U \rightarrow S$ operates by comparing the linguistic and grammatical features in u_i against a set of predefined rules.

Unlike machine learning approaches, this system does not require large amounts of training data or parameter optimization. Its advantage lies in its interpretability: each label assigned can be explained linguistically through the rules applied. In this way, the system is useful not only as a research analysis tool but also as a pedagogical instrument that can show students why a particular utterance is categorized under a certain strategy.

B. Rule Formulation

The formulation of rules was carried out through two channels: pragmatic theory and empirical observation from data. From the theoretical side, this study refers to the politeness model of Brown and Levinson [21] and the pragmatic principles of Leech [22], which emphasize factors such as politeness, empathy, and the reduction of face-threatening acts. From the data side, consistent linguistic patterns appearing in negotiation transcripts were analyzed to identify distinctive markers that could be used as lexical markers as well as grammar patterns. To ensure that the rules can be formally understood and implemented in a computational system, all rules were rewritten in the form of First-Order Logic (FOL) [18], [23].

For example, the rule for the directness strategy was formulated based on the presence of strong modals (must, need, have to) or imperative forms (give, send, provide). An utterance such as “We must sign the contract today” is directly categorized as directness. However, if the same utterance contains the word please, the system prioritizes politeness and reclassifies it as politeness. The directness rule in FOL is:

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$$\forall u\,[(Contains(u, must) \vee Contains(u, have\_to) \vee Imperative(u)) \wedge \neg Politeness(u) \wedge \neg Mitigation(u)] \Rightarrow Directness(u)$$

The politeness strategy is identified through explicit politeness expressions such as please, kindly, would you mind, as well as interrogative forms with polite modals (would, could). A concrete example is "Would you mind sending us the draft?". The presence of an interrogative structure with a polite modal differentiates this category from directness even though the core request is the same. The politeness rule in FOL is:

$$\forall u\,[(Contains(u, please) \vee Contains(u, kindly) \vee ModalPolite(u))] \Rightarrow Politeness(u)$$

The mitigation strategy is more complex because it does not rely solely on specific words, but also on clause patterns. Mitigation occurs when a request or demand is preceded by an empathetic clause such as "we understand", "I realize", "we know". Example: "We understand your situation, but we still expect a discount." In this case, the empathetic clause functions to soften a potential face-threatening act. Therefore, even though a strong modal (expect) is present, the rule still classifies the utterance as mitigation.

$$\forall u\,[StartsWith(u, EmpathyClause) \wedge Contains(u, Request)] \Rightarrow Mitigation(u)$$

The hedging strategy is identified by the presence of epistemic expressions (maybe, perhaps, I think, it seems) combined with non-assertive modals (might, could). Example: "Maybe we could consider an alternative approach." The important distinction is that hedging is not satisfied by a non-assertive modal alone; there must also be an epistemic marker that reinforces uncertainty. According to this rule, "We could consider an alternative" is not hedging but rather weakened directness.

$$\forall u\,[Contains(u, \{maybe, perhaps, I\ think, it\ seems\}) \wedge WeakModal(u)] \Rightarrow Hedging(u)$$

Since in practice an utterance may contain more than one marker, the system requires priority rules. The principle is that socially oriented strategies take precedence. Thus, mitigation overrides politeness and directness; politeness overrides directness. Hedging is treated differently: it is only valid if the full condition (epistemic marker + non-assertive modal) is satisfied. These priority rules prevent multiple classifications and maintain consistency.

$$\forall u\,[Mitigation(u) \Rightarrow \neg Politeness(u) \wedge \neg Directness(u)]$$
$$\forall u\,[Politeness(u) \Rightarrow \neg Directness(u)]$$

To clarify implementation, consider the following example: "We need the draft by tomorrow, please." The directness rule initially applies because of the modal need. However, the system then detects the word please, which triggers the politeness rule. Based on the priority rules, the final label assigned is politeness. With this formal mechanism, each classification decision can be traced back to the explicit rules that underlie it.

TABLE I
LEXICAL FEATURES OF PRAGMATIC STRATEGIES

Strategy	Lexical Markers (Words/Phrases)	Example Utterance
Directness	must, need, have to, should, shall, require, demand, insist, order, mandatory, necessary, obligation, definitely, certainly, absolutely, give, send, provide, deliver, finalize, confirm	"You must submit the draft today."
Politeness	please, kindly, would you mind, could you, may I/we, would it be possible, I would appreciate, I would be grateful, if you don't mind, I hope you can, I wonder if, thank you, excuse me	"Could you kindly provide the invoice?"
Mitigation	we understand, I realize, I know, I acknowledge, we are aware, I appreciate, it is clear that, we recognize, we see your point, I accept that, we admit, allow me to say, forgive me	"I realize your time is limited, but I still need your confirmation."
Hedging	maybe, perhaps, I think, I believe, I guess, it seems, it appears, possibly, probably, likely, in my opinion, from my perspective, might, could, can, would, sort of, kind of	"Perhaps we could adjust the timeline slightly."

Table 1 presents the lexical markers that signal each pragmatic strategy. These markers include single words and formulaic phrases that directly indicate whether an utterance is expressed with directness, politeness, mitigation,

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or hedging. For example, strong modals such as must or need are typical indicators of directness, while expressions like please or would you mind are strongly associated with politeness. Empathetic clauses such as we understand and I realize function as markers of mitigation, whereas hedging is characterized by epistemic expressions like maybe or I think. These lexical items provide the most explicit cues for identifying pragmatic strategies.

While lexical features are useful, they are not sufficient on their own. Pragmatic strategies are also reflected in structural choices at the grammatical level. Table 2 outlines the grammatical patterns that serve as additional indicators for classification. Imperatives and strong modal constructions typically realize directness, whereas politeness often appears in interrogatives with polite modals or indirect request formulas. Mitigation emerges through combinations of empathetic and contrastive clauses, while hedging is identified through tentative structures such as it seems or limiting phrases like sort of and kind of. These grammatical patterns complement the lexical markers and allow the system to capture pragmatic strategies more reliably across varied utterances.

TABLE II
GRAMMATICAL FEATURES OF PRAGMATIC STRATEGIES

Strategy	Grammar Patterns	Example Utterance
Directness	Imperatives without polite modals ("Send us the draft"); simple declaratives ("We need the draft today"); sentences with strong modals (must, have to, shall)	"You must finalize the contract today."
Politeness	Interrogatives with polite modals (would, could, may); requests + please; polite conditional clauses ("If possible, could you…"); indirect request formulas ("I wonder if…")	"Would you consider lowering the price?"
Mitigation	Empathetic clause + demand clause ("We understand…, but…"); acknowledgment clause at the beginning ("I realize that…, however…"); softener phrase ("It may be difficult, but…"); contrastive clause structures	"I realize this is urgent, but we still hope for more time."
Hedging	Epistemic marker + non-assertive modal (maybe + could/might); subjective opinion clauses ("I think/I believe + clause"); tentative structures ("It seems/It appears that…"); hedge phrases ("sort of/kind of")	"I think we might reach an agreement later."

III. RESULT AND DISCUSSION

A. *Experimental Setup*

The dataset used in this study consisted of 1,200 utterances drawn from transcripts of simulated business negotiations conducted by undergraduate business administration students. Each negotiation session was carried out in English and transcribed into text. The transcripts were segmented into utterances, with one utterance defined as a complete speech turn by a participant. The dataset covered a range of negotiation contexts such as price offers, deadline extensions, and contractual agreements, which provided sufficient variation in pragmatic strategies.

Three independent annotators with expertise in pragmatics labeled the dataset using the predefined codebook. Each utterance was assigned to one of the four pragmatic strategies: directness, politeness, mitigation, or hedging. Disagreements among annotators were resolved through discussion, and inter-annotator agreement reached Cohen's $\kappa = 0.82$, indicating substantial agreement. This manually annotated dataset served as the gold standard for evaluating the system.

The testing scenario was designed to simulate the practical use of the rule-based system in analyzing negotiation transcripts. The system processed each utterance deterministically by applying lexical and grammatical rules represented in first-order logic. The classification results were then compared against the gold-standard annotations. Performance was measured using precision, recall, and F1-score for each category, along with macro-averages. An error analysis was also conducted to examine cases of misclassification, especially in utterances containing overlapping strategies.

B. *Classification Results of Pragmatic Strategies*

The rule-based approach successfully classified all utterances in the corpus into four main pragmatic strategies: directness, politeness, mitigation, and hedging. The classification process was conducted deterministically based on the lexical and grammatical rules formulated earlier. Table 3 shows the distribution of strategies.

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TABLE III
DISTRIBUTION OF PRAGMATIC STRATEGIES IN STUDENT NEGOTIATIONS

Strategy	Number Of Utterance	Percentage (%)
Directness	620	51.7
Politeness	370	30.8
Mitigation	140	11.7
Hedging	70	5.8
Total	1200	100

The distribution shows that directness dominates student interactions, with the highest proportion among the four strategies. Politeness occurs with moderate frequency, while mitigation and hedging are relatively rare. This suggests that students are more comfortable using straightforward expressions compared to more subtle or tentative strategies. To illustrate how the system works, several examples are presented in Table 4.

TABLE IV
EXAMPLES OF CLASSIFIED UTTERANCES

Strategy	Utterance	Reason
Directness	"We need the report by tomorrow."	The system identified *need* as a strong modal → directness.
Directness	"Sign the contract immediately."	Imperative form without softening.
Politeness	"Could you please clarify this point?"	Interrogative with modal *could* + marker *please*.
Politeness	"Would you mind extending the deadline?"	Polite formula *would you mind*.
Mitigation	"We understand your concern, but we still hope for a discount."	Empathetic clause *we understand* at the beginning.
Mitigation	"I realize this is urgent, however we need more time."	Dual clause pattern (empathy + demand).
Hedging	"Maybe we could adjust the timeline."	Epistemic marker *maybe* + non-assertive modal *could*.

These examples demonstrate that the system can consistently identify pragmatic strategies based on the predefined linguistic markers.

C. *Per Strategy Analysis*

The analysis shows that directness is the most dominant strategy used by students. Many utterances express requests, demands, or instructions in a straightforward way, often with strong modals such as must, need, and have to, or through imperatives like send and sign. The prevalence of this form indicates that students are inclined to choose simple and unsoftened expressions. While this tendency reflects efficiency in communication, in authentic business settings it may come across as impolite or overly forceful.

Politeness appears less frequently but still occurs with consistency. Students often rely on formulaic expressions such as please, could you, and would you mind, which shows their awareness of the need for courteous communication. However, the range of expressions remains narrow, as more elaborate constructions like I would appreciate it if… or Would it be possible to… rarely appear. This suggests that students require more training to develop a richer repertoire of polite expressions suitable for professional negotiation.

Mitigation is used more sparingly and typically appears when requests are preceded by empathetic clauses such as we understand or I realize. These patterns show an effort to soften the impact of a demand, but they are not widely adopted by the majority of students. The limited presence of mitigation may be linked to insufficient exposure or explicit instruction in classroom practice. This gap suggests that greater emphasis is needed on teaching how to integrate empathy into negotiation discourse, especially when managing potential face-threatening acts.

Hedging is the least employed strategy. When it occurs, it is usually marked by simple expressions such as maybe or I think, with other tentative forms like it seems or possibly largely absent. The avoidance of hedging indicates that students may perceive tentative language as weakening their bargaining position. Yet, in international business negotiations, hedging can be a useful device to open space for compromise without appearing confrontational. The minimal use of hedging therefore reflects another area where students' pragmatic competence could be strengthened through targeted pedagogical practice.

D. *Comparison with Manual Annotation*

The results of the rule-based system were compared with manual annotations produced by three pragmatic

experts. Inter-annotator agreement, measured using Cohen's κ, reached 0.82, reflecting substantial agreement. System performance was evaluated using precision, recall, and F1-score. The results are summarized in Table 5.

TABLE V
EVALUATION OF THE RULE-BASED SYSTEM

Strategy	Precision	Recall	F1-Score
Directness	0.94	0.95	0.94
Politeness	0.9	0.88	0.89
Mitigation	0.76	0.71	0.73
Hedging	0.72	0.67	0.69
Macro-avg	0.83	0.8	0.81

The results show that the rule-based system performs very well in identifying directness and politeness, but less effectively with mitigation and hedging. This can be attributed to the greater linguistic variation and implicitness of the latter two strategies, which are harder to capture through explicit rules.

E. Error Analysis

Two main error patterns were observed. First, some utterances that should have been classified as mitigation were categorized as politeness. For example: "I realize this is urgent, could you extend the deadline?" The system identified could you as politeness, though the empathetic clause should have triggered mitigation. This points to the need for stricter priority rules.

Second, some hedging utterances were misclassified as directness because they contained only a non-assertive modal without an epistemic marker. For instance: "We could consider another option." The system labeled it as directness, though in context it could function as light hedging. This highlights the system's limitation of relying solely on explicit markers.

F. Pedagogical Implications

The findings have significant implications for teaching English for Business Negotiation. The dominance of directness highlights the need for training that balances pragmatic strategies. Instructional materials should emphasize politeness, mitigation, and hedging, as these are vital for maintaining long-term business relationships. The uneven distribution also indicates that students rely heavily on a limited set of formulaic expressions, suggesting the importance of exercises designed to broaden their pragmatic repertoire.

From a technological standpoint, the rule-based system can serve as the foundation for automatic feedback. For example, if a student produces "We need the report now", the system identifies it as directness and suggests a more polite alternative such as "Could you please send the report today?". In this way, the system functions not only as a research tool but also as a pedagogical instrument that directly supports learning.

IV. CONCLUSION

This study proposed a rule-based approach to classify pragmatic strategies in English business negotiation discourse. The system was designed to operationalize four strategies—directness, politeness, mitigation, and hedging—through a set of lexical and grammatical rules expressed in first-order logic.

The analysis showed that out of 1,200 utterances, directness dominated with 51.7%, followed by politeness (30.8%), while mitigation (11.7%) and hedging (5.8%) were relatively rare. Evaluation against manual annotation revealed good consistency (macro F1 = 0.81) and high inter-annotator reliability (κ = 0.81). The system performed very well in identifying directness and politeness, but was less effective for mitigation and hedging, which are more varied and often implicit.These findings indicate that students tend to favor straightforward and simple utterances, while more complex strategies such as mitigation and hedging are seldom used. From a pedagogical perspective, this highlights the need to enrich pragmatic training so that students can master a wider range of strategies that better align with the practices of international business negotiation.

Based on the results, it is recommended that the teaching of English for Business Negotiation give greater emphasis to mitigation and hedging strategies, which remain underutilized by students. At the same time, the proposed rule-based classification system can be employed as an automatic feedback tool, allowing students to directly observe the strategies they use and possible alternatives. Methodologically, the rules could be extended by adding more lexical markers and combined grammatical patterns. For future research, the system should be tested

with participants from different backgrounds and compared with machine learning approaches to assess the relative effectiveness of the two methods.

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