Time Efficient Secure Negotiation in E-Trading

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Abstract- In Electronic trading buyers and sellers are involved in business activities through electronic media and not by directly physical contact. Electronic trading gives a virtual market place in which negotiation is a fundamental component. The exiting e-trading has not been addressed the critical risks of missing out offers on top utility that expire before client's negotiation deadline. In order to deal with this problems, we propose a framework that based on mobile-agent and secure one-to-many bilateral e-trade negotiation this framework effectively handles the risk of losing top utility offers. It also maximizes client's utility by considering various temporal constraints. Efficiently manages the risk of losing top utility offers and maximizes client's utility taking into account various temporal constraints. Theoretical and experimental analysis of the proposed system is performed. Proposed strategy's performance is evaluated in terms of client's utility and negotiation time and compared them with two baseline negotiation methods. The experimental result shows that the proposed strategy increases client's utility, minimizes negotiation time, and make sure adequate market search. Proofs of validity of the proposed utility function are presented. The security protocol is formally verified and the verification shows that the protocol is free of security flaws and hence, negotiation data are secured.

Indexed Terms- bilateral, electronic trading, one-to-many, and negotiation, utility.

I. INTRODUCTION

In Existing system is negotiation strategies do not effectively manage the risk of losing top utility offers that expire before the client's negotiation deadline. They either interrupt negotiation for bid award without assessing the market status accurately or delay offer evaluation until client's negotiation deadline. They also do not consider two significant temporal constraints: vendors' negotiation deadlines and network time delay. Negotiation strategies are generally classified based on trading eagerness as (1) desperate; (2) patient; (3) partially patient; (4) optimized patient. The desperate strategy terminates negotiation once it finds an offer that satisfies client's preferences and constraints. The patient strategy continues negotiation until client's negotiation deadline and then chooses the offer that has the top utility. The partially patient strategy would interrupt negotiation when the expiry time of an offer is earlier than the client's negotiation deadline. The optimized patient strategy evaluates the outcomes of a negotiation round after an optimization period and amends negotiation constraints in the next negotiation round to optimize client's utility. It continues negotiation until client's negotiation deadline.

So above four strategies does not achieve best offer, does not reduce network delay.

II. LIMITATION OF EXISTING SYSTEM

i. Existing system do not address security threats to negotiation data and the risk of losing top utility offers that expire before client's negotiation deadline simultaneously
ii. The existing security approaches cannot truly preserve the various security properties of data exchanged during e-negotiation.
iii. The strategy is based on offers ranking rather than counter-offer generation. The authors assumed incomplete information about vendors' negotiation deadlines.
iv. They also do not consider two significant temporal constraints: vendor's negotiation deadlines and network time
v. The existing utility functions do not consider the impact of offer validity time and market search

space on offer utilities, and thus the evaluation and ranking of offers would not be accurate.

III. PROBLEM DEFINITION

This system addresses the problem of secure one-to-many e-negotiation strategy which emphases on offers with specific expiry deadline. These can be achieved by using mobile agent based secure bilateral negotiation framework.

IV. AIM AND OBJECTIVES

To propose a new one-to-many bilateral e-trade negotiation framework that efficiently manages the risk of losing top utility offers and maximizes client's utility taking into account various temporal constraints.

V. OBJECTIVES

i. Design mobile agent based secure and efficient one to many bilateral negotiation framework
ii. Implement negotiation strategy to reduce negotiation time.
iii. To design new decision making function for offers evaluation.
iv. Provides more secure, accurate, flexible framework of negotiation in E-commerce.
v. Design robust security framework against several type security attacks.

A. NEGOTIATION STARTEGIES

We now look at how various exiting strategies perform with respect to choosing the best offer.

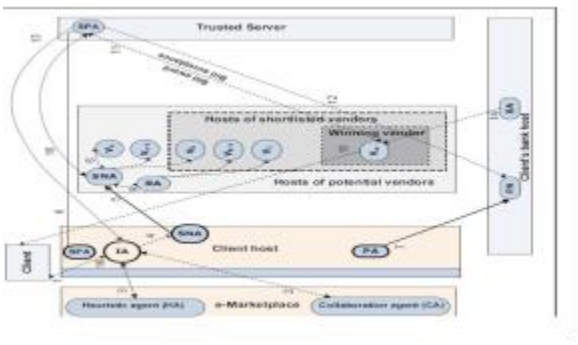
i. The desperate strategy-
   Awards the bid to the first acceptable offer which supports the minimum client's constraints, but not provide the top utility, this leads to client's loss buy a product or to book air ticket.
ii. The patient strategy -
   Patient strategy extends search/negotiation till the client's negotiation deadline and then awards the bid to the offer. So, it misses out the offer of top utility that, has a short validity and expires before the client's negotiation deadline.
iii. The partially patient strategy
   The partially patient negotiation strategy awards the bid to the first time-limited offer since, it expires earlier than the client'snegotiation deadline. So, this strategy is does not achieve top utility.
iv. The optimized patient negotiation strategy

The optimized patient negotiation strategy would miss out on the least priced offer if, the optimization time is longer than the expiry time of offer. The strategies do not maximize client's utility.

B. PROPOSED SYSTEM

This proposed system addresses the problem of secure one-to-many e-negotiation strategy with emphases on offers with specific expiry deadline. In e-trade, vendors often announce special offers with public expiry deadlines. The top utility offer has a fixed validity time that cannot be negotiated and may be earlier than the client's negotiation deadline. In this case, the offer may expire before the negotiation is completed and hence the top utility offer would be missed out. Which is composed of several rounds where the client and vendor agents exchange offers in an alternating way. Duplicate offers are not allowed during negotiation. This is handled by using a unique nonce that identifies the protocol run.

C. SYSTEM ARCHITECTURE



i. System Architecture is used to modify existing auction basedthe simultaneous one to one negotiation strategy
ii. .The negotiation protocol implemented between negotiators.

iii. NEGOTIATION PROTOCOL enables to one to many secure bilateral negotiation by taking real world example in e-trading.
iv. The mobile agent in negotiation ensures the adequate market search. Reducing communication delay.
v. Maximizing profits,
vi. Secrete key generation for bilateral negotiation

D. FUNCTIONAL MODULES

Following four modules of Proposed System:

i. User Module-Buyers can login into system and can search the offers
ii. Search offer-The buyer give the criteria to search the product offers
iii. Offer collection and Offer Evaluation-

The offer is collected from different buyers. The evaluation process suggests the appropriate offers based on customer interests, it will display the related offers with deadlines. Evaluation process evaluates the offer by ensuring adequate market search.

iv. Secrete Key Generation

To keep negotiation data secure, secrete key is generated, the buyer can view the offer only when the secrete key is matches between vendor and customer. Matching of secrete key ensures the authentication of users

VI. ALGORITHMS

- Offer collection Algorithm

INPUT: Dsna, NMIN, OUTPUT offer F, Visit

BEGIN
1 IF ((Visit(Vi)=0) and (Alert NOT On) and (Tcnd!0)) THEN
2 Fi(Vi) //collect offer Fi from Vi
3 Ui (Fi) //compute offer utility
4 IF (Selection criteria (Fi) Is not TRUE) THEN
5 Discard offer (Fi)
6 ELSEIF (Tev!cnd) THEN //offer expiry time ! neg.time
7 Talt (Fi,Ri,Di) //compute alert time
8 ENDIF
9 F=Vi,Fi,ti,ui,ts(((Vid,Fi,ui,Talt,ts))Sig11)KTS
10 Talt=0; Nvisit=Nvisit+1//vendors visited
11 ENDIF
12 ENDIF
13 END offer Collection

- Offer Evaluation

```
1.  Verify collected offer
2.  Utop=max(U)                                   //get top utility offer
3.  IF (Alert==ON) THEN                           // Early candidate selection
4.  IF ((Uk!=Utop) and (NMIN !=0)) THEN
5.  Gk➔utilityindex(f2)
6.  Dk➔validityindex(f2)
7.  Sigma==standarddeviations(f2)
8.  IF((Gammakj=Gammal) and (k≥=) and (Sigma!4)) THEN
9.  Remove alert (Fj)
10. ELSE
11. Settle with the vendor
12. ENDIF
13. ELSEIF (Tcnd==0) THEN                         // collection deadline reached
14. Settle with the vendor that has the top utility Utop
15. ELSE // negotiation deadline is not reached
16. UT = max(Utop,UT)
17. Compute concession rates
18. Generate a new nonce N
19. Generate counter-offer
20. another round starts
21. ENDIF
```

VII. MATHEMATICAL MODEL

The Mathematical model is in the form of set theory is given below:

Set Theory S={s, e, X, Y, k} Where,

s = Start of the program, e end of program, X issues to be negotiated, Y offer chosen output K the unique key generated among each seller and buyer, Log in with System by providing username and password.

1. Let $\{P_i\}^n_{i=1}$ --- The list of n products $\{P_1,P_2,P_3,P_4,\ldots\ldots\ldots\ldots\ldots,P_n\}$ to buy/sell and
2. $\{P_i{}^j\}^m_{j=1}$ – The list of m issues of product Pi such as $\{P_1^{Price},P_1^{warrenty},P_1^{deadline}\}$on which negotiation is to be carried out
3. X = Input of the preferences/issues to search product. Input of this system is Product type, price deadline.
4. Client and vendor interaction

a) Offer collection→ the client and vendor agents negotiate through exchanging offers. An offer $\boldsymbol{fi}$ from an entity $\boldsymbol{i}$ is defined as: $fi=\langle vid,X,TSV,TEV,RFOk\rangle$ where vid is the unique identifier of the vendor generating offer fiX is the values of the issues to be negotiate offer attributes,

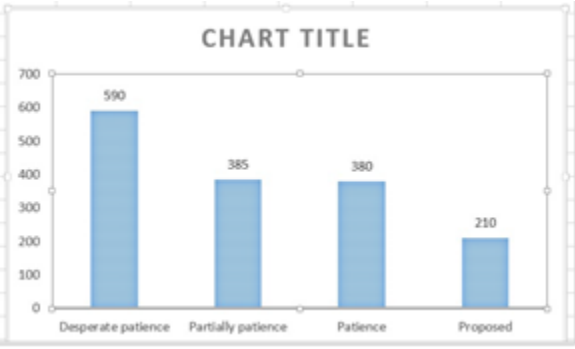
TSV is the offer start time validity TEV is the offer end time validity. The parameter $RFOk$ denotes the request for offer from client k.

b) Special offer → an offer f1 from a vendor i is said to be special offer if it meets following condition$U_{i>=}U_{top}$ and $T_{ev}<T_{cnd}$
c) Competitive offer→ An offer fi from a vendor is said to competitive if if it meets following conditionsui=Utop and $T<<(T_{ev})^{top}$
d) Normal offer→ if an offer f1 from a vendor i is not satisfies both conditions it is said to be normal.

5. Offers are evaluated with the help of matching criteria given by client.
6. Request for secret key→ The client give the request for offer as equation -1 ,the vendor acts as a admin ,vendor generates the secrete key and given to client for unique offer between pair of client and vendor ,client only view the offer after successful matches.
7. Y→Output of the program is client download the offers and furtherly purchase the product through the TS(trusted Bank server) using BA(bank Agent)

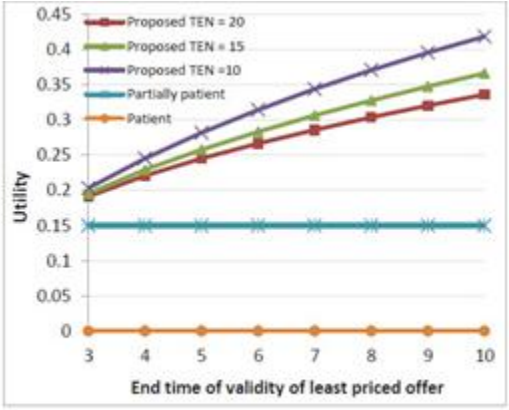
VIII. RESULTS

I. Impact On Offer Selection



Best offer selection compare to other strategiesResults shows the e-trading negotiation system performs better compare to existing strategies. The existing strategies requires more time to get best offer and so there is more risk to loss of more beneficiary offers to customer. Our Proposed system works better than Desperate Patient Partially patient and Patient strategies.

II. Adequate Market Search



IX. CONCLUSION

In this project we presented one to many secure negotiation Framework, the negotiation strategy with secret key generation reduces negotiation time, ensures adequate market search by providing multiple vendors to search product offers, network delay is reduced with the help of secure login process for client.

X. FUTURE SCOPE

In the future proposed system can be more enhanced effective which leads to encourage in research in three interesting areas first research area is to establish an electronic market driven negotiation methods and strategy that takes market status into account and remaining negotiation deadlines of both the negotiating vendors and clients. The market status consists of competition level between different vendors in the e-market., availability of goods or services, upcoming opportunities in the e-market, and eagerness

The further area of research is to incorporate other key factors in the proposed utility function including vendor's profiles, promotions and extra services. The profile is measured based on trading scale, creditability, deadlines and service level of a vendor.

The third research area is to extend the security protocol to avoid deadlocks in large scale systems such as failure of Trusted Servers.

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