ECN 421 Course Project

Oracle-PeopleSoft Hostile Takeover Analysis

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I. Abstract & Motivation

Our analysis focuses on the hostile takeover between companies[1] based on a real-world example: the hostile takeover of Peoplesoft by Oracle in 2003.[2,3] Oracle and Peoplesoft are both major software suppliers based in California. Their services are used to manage business relations dealing with financial reporting and human resources. The acquisition lasted 18 months and cost Oracle $10.3 billion after an ongoing legal battle with the US Justice Department (Bank, 2004). One key characteristic of a hostile takeover is the target company objects to the acquisition. Therefore, there would always be a battle between two or more companies. Since Oracle eventually acquired Peoplesoft, we worked backward to review the acquisition process to understand both company's strategies

To avoid being acquired by Oracle, Peoplesoft's management took actions that raised the cost of acquisition. If Oracle can no longer afford the price of acquiring, they will fail to claim PeopleSoft. In response to PeopleSoft's defense techniques, Oracle continued to add money to its offer, and the price raised from $5.1 billion to $10.3 billion (Bank, 2004). Peoplesoft then sued Oracle for monopolistic behavior. Then they conducted the "Poison Pill" program, "Golden Parachute" program, and "White Knight" program, which also brought IBM into the game.[4,5,6,7]

This project requires a basic understanding of how firms merge and what is involved in an acquisition. It combines the study of business management and game theory. Conducting this project can help students achieve a better understanding of how game theory works and how to apply it to business and company operations. Furthermore, the merger has implications for the technology industry at large as well. There are currently four major software dealers that operate in the United States: Oracle, SAP, Microsoft, and Sage. If these companies continue to merge, their influence on the software market would grow, because the number of competitors will decrease each time a merge occurs. Using game theory, we can better understand why these

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[1] **Hostile takeover** occurs when an acquiring company attempts to take over a target company against the wishes of the target company's management (Ganti, 2021).

[2] **Oracle, Inc.** is a cloud technology company that provides organizations around the world with computing infrastructure and software (Oracle Inc., 2022).

[3] **PeopleSoft, Inc.** was a company that provided human resource management systems (HRMS), Financial Management Solutions (FMS), supply chain management (SCM), customer relationship management (CRM), and enterprise performance management (EPM) software, as well as software for manufacturing, and student administration to large corporations, governments, and organizations (PeopleSoft Inc., 2022).

[4] A **poison pill** is a defense tactic utilized by a target company to prevent or discourage hostile takeover attempts. It allows existing shareholders the right to purchase additional shares at a discount, effectively diluting the ownership interest of a new, hostile party (Hayes, 2022).

[5] A **white knight** is a hostile takeover defense whereby a 'friendly' individual or company acquires a corporation at fair consideration when it is on the verge of being taken over by an 'unfriendly' bidder or acquirer (Hayes, 2020).

[6] **IBM, Inc.** is an American multinational technology corporation. It also provides cloud services that compete with Oracle (IBM Inc., 2022).

[7] A **golden parachute** consists of substantial benefits given to top executives if the company is taken over by another firm, and the executives are terminated as a result of the merger or takeover (Hayes, 2021).

acquisitions occur and what steps can be taken to stop them. This understanding could also help inform government antitrust policy.

We chose this analysis because the topic of game theory is widely used in the business world, and every decision is vital in those scenarios. Game theory, in this context, can help people predict the outcome of business strategies. We also review Oracle's business acquisitions other than PeopleSoft.[8] As of 2022, Oracle has made 125 acquisitions and 83 investments (Tracxn, 2022). It is interesting to investigate how this company executes its strategy to become a mega enterprise step by step.

II. Extensive Form
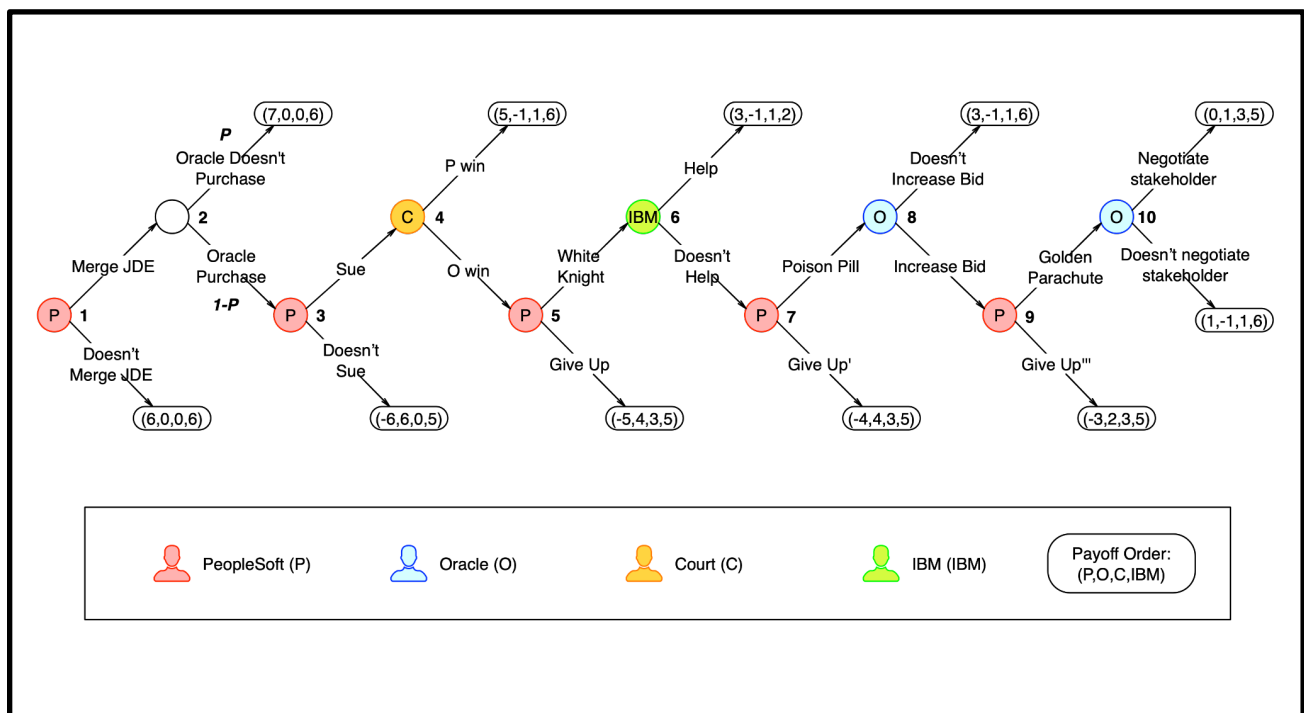
There are four players in the game: PeopleSoft (P), Oracle (O), Court (C), and IBM (IBM). The order of payoff numbers is: (PeopleSoft, Oracle, Court, IBM). The payoff numbers for PeopleSoft, IBM, and Oracle represent indicators of the value of the assets (i.e. cash flow, share, etc.) that each player is holding. The payoff number for the Court indicates the value that the Court received by making decisions (i.e. lawsuit fees, social benefit, etc.)

First, the game starts with the first player PeopleSoft (P). If P chooses not to purchase J.D. Edwards, Oracle will not recognize P as a competitive threat (In other words, Oracle will not

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[8] Oracle's acquisitions also involve Cerner, NetSuite, BEA Systems, etc.

be interested in claiming PeopleSoft). Therefore, nothing will happen. The game ends with a payoff (6,0,0,6). IBM starts with an original payoff number 6, because it has a partnership with SAS Corp. If P decides to merge with J.D. Edwards, Oracle (O) with probability **P** engages in the acquisition with PeopleSoft to protect its market position. If O doesn't purchase P, P ends with payoff (7,0,0,6). PeopleSoft successfully merging with J.D Edwards makes P's value increase. If O starts to purchase P, P gets to choose to sue O or not. When P decides not to sue, O wins the game with payoff (-6,6,0,5). IBM's payoff will be deducted by 1, because Oracle will be able to compete with IBM in the business software market after the merger, which can hurt IBM's profit. However, if P sues and wins, Oracle cannot merge with PeopleSoft, so the game ends with a payoff (5,-1,1,6). In this case, C also gains payoffs because of the lawsuit fees from P. P and O loses payoff due to paying lawsuit fees to C. Else, P can either engage a White Knight or give up fighting. Giving up would lead to the game result of (-5,4,3,5), in which O wins the game. Each time after O wins the suit and the game, C will have a payoff of 3 because of higher social welfare. See the explanation at the end of the "Extensive Form" section. If P starts the White Knight program, IBM (IBM) will be brought into the game. If IBM chooses to help, it owns a partial share of P, the game ends with a payoff (3,-1,1,2). In the case IBM helps, its payoff becomes lower because helping PeopleSoft will annoy SAS and break its partnership with IBM. Even though IBM owns a partial share of PeopleSoft, the break-up will cause a significant profit loss. If IBM does not help, P should take further steps to defend itself.

With the exit of IBM (IBM), PeopleSoft (P) can choose either to deploy a Poison Pill program or to give up. If giving up is the decision, Oracle owns PeopleSoft, the game ends with a payoff (-4,4,3,5). However, if PeopleSoft (P) applies Poison Pill, O would have to pay more to retrieve a certain amount of shares. In this case, if O does not increase the bid, the stakeholder of P holds a depreciated share, and the game ends with a payoff (3,-1,1,6). If O increases the bid, PeopleSoft should think of other strategies for defense.

The final step for PeopleSoft is to either give up or deploy a Golden Parachute program. If it gives up, Oracle takes over PeopleSoft with a higher price and ends the game with a payoff (-3,2,3,5). If it deploys a Golden Parachute program, O can choose to negotiate with P's stakeholders or not. Negotiation will enable O to stop P's "Golden Parachute" program and takeover P by paying the stakeholders a higher price. The game ends with a payoff (0,1,3,5). If Oracle does not negotiate, the Golden Parachute will further hurt P and end the game with (1,-1,1,6).

As mentioned above, if P chooses to sue O, O wins the suit, and O finally successfully merges with P. C's payoff, in this case, would be the lawsuit fee from both P and O, as well as the social benefit of letting O win the suit. The social welfare comes from the reason that if O successfully merged with P, Oracle will be able to directly compete with Microsoft, which added competitiveness to the market (OUT-LAW news, 2004). Apart from that, if IBM does not help

PeopleSoft and Oracle successfully merge with PeopleSoft, owning PeopleSoft will enable Oracle to compete with IBM. That is why IBM's payoff will be deducted by 1.

If PeopleSoft chooses not to sue, it ends with a payoff of -6 because Oracle merges PeopleSoft with the lowest cost, and not taking action to defend itself would not push Oracle to add a bid. Therefore, the stock price of P is the cheapest at node 3 of the game. O can spend the least money to take over P. Thereby P's stakeholders receive the least money. In other words, P not taking enough actions to defend itself would hurt its investor benefits and its reputation. The payoff gradually increases at nodes 5, 6, and 9 because P's insistence on combating O protected its reputation and the stakeholder's benefits (P's stock price increases after each defensive action). However, the payoff number remains negative because Oracle successfully merged with PeopleSoft if P gave up.

III. Solution Concept

Oracle's hostile takeover of PeopleSoft as a case study contains the aspects of a typical dynamic game. First of all, even though there is a move of nature, the game is mostly under perfect information, which allows all the players in the game to see the decisions made by the predecessors, and then the players can make their own decision. For example, in the second round of the game, Oracle will have the choice to start the merger with PeopleSoft only if they see that PeopleSoft decides to purchase J.D. Edwards.

Players also have perfect information about payoffs. As is introduced in the "Extensive Form" section, the payoff numbers of three companies are based on the value of assets that each player is holding, and the court's payoff also contains the factors of social welfare. For the companies, their rationality enables them to identify the result of each decision that will maximize their payoffs. For example, IBM knows that if it helps PeopleSoft, even though they will own a partial share of P, losing the partnership with SAS as a price lead to a lower payoff.
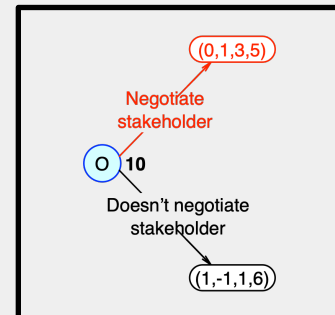
We assume that the players also have common knowledge of sequential rationality, in which players at each information set will choose the decision that offers the highest payoff (utility maximization). In this game, three firms (and the court) should always choose the profit (social welfare) maximization option. For example, after PeopleSoft sues Oracle, Oracle will always try to make the merger successful. Otherwise, O's payoff will drop to -1.

Based on the information above, this game has three characteristics: complete information, perfect information about payoffs, and common knowledge of sequential rationality. Therefore, the solution concept shall be Subgame Perfect Nash Equilibrium (Watson, 2013, p. 183).

IV. Solution

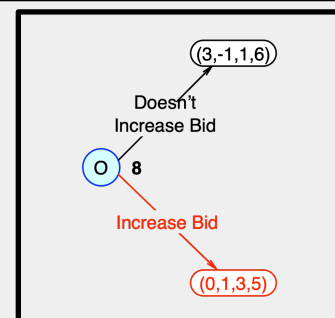To solve this game, we start at the end and work backward (the branch will be marked red if it is the best response).

At node 10, Oracle will negotiate with PeopleSoft's Stakeholders since O's utility gained from negotiation is higher than not negotiating (1 > -1).

```
                    (0,1,3,5)
              Negotiate
              stakeholder
    O  10
              Doesn't negotiate
              stakeholder
                    (1,-1,1,6)
```

Assuming that P knows O is behaving rationally, they will face a payoff of 0 if they employ the Golden Parachute program and -3 if they give up at node 9. Given the payoff numbers, P will choose the Golden Parachute.

```
                    (0,1,3,5)
              Golden
              Parachute
    P  9
              Give Up'''
                    (-3,2,3,5)
```
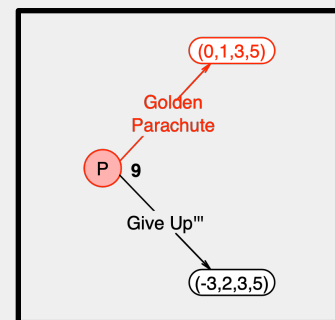
At node 8, Oracle will choose to increase the bid because (1 > -1).

```
                    (3,-1,1,6)
              Doesn't
              Increase Bid
    O  8
              Increase Bid
                    (0,1,3,5)
```

Since it is rational for Oracle to increase the bid, we can assume that P would use the Poison Pill to raise the cost of O's acquisition at node 7.

```
                    (0,1,3,5)
              Poison Pill
    P  7
              Give Up'
                    (-4,4,3,5)
```
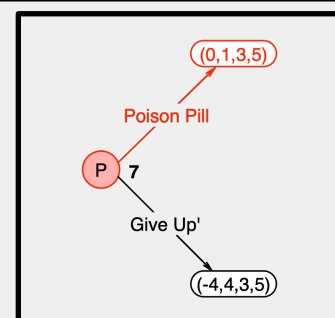
At node 6, IBM faces a payoff of 2 if they help and 5 if they do not help, so they would choose the "Doesn't help" option.

(3,-1,1,2)

Help

IBM 6

Doesn't
Help

(0,1,3,5)
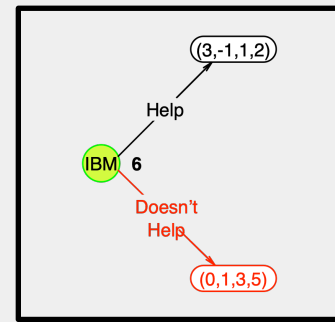
At node 5, P knows IBM will note help, but P will still deploy the White Knight for a higher payoff (0 > -5).

(0,1,3,5)

White
Knight

P 5

Give Up

(-5,4,3,5)
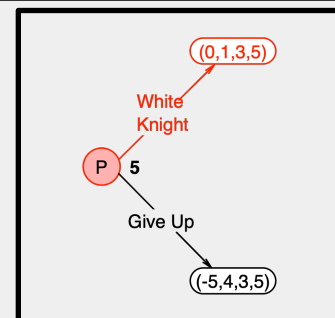
At node 4, the Court receives a higher payoff if they rule in favor of Oracle.

(5,-1,1,6)

P win

C 4

O win

(0,1,3,5)
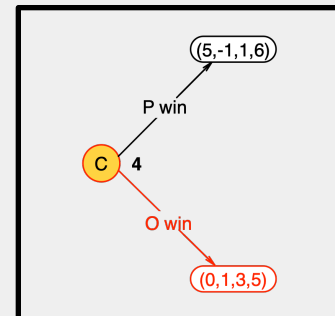
Although P knows that the court will support O, they gain more utility by suing anyway because it allows them to try other methods of stopping O. That is why P still chooses to engage lawsuit at node 3.

(0,1,3,5)

Sue

P 3

Doesn't
Sue

(-6,6,0,5)
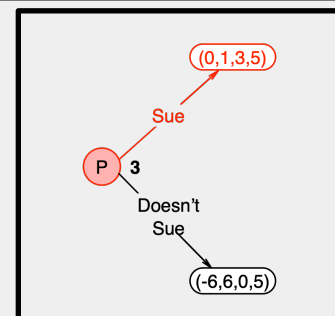
At node 2, there is a move of nature (not a subgame). Oracle has **P** to purchase PeopleSoft and **(1-P)** for not purchasing. Oracle faces a payoff of 0 if they do not purchase Peoplesoft and a payoff of 1 if they do.

P
(7,0,0,6)
Oracle Doesn't
Purchase
2
Oracle
Purchase
1-P
(0,1,3,5)
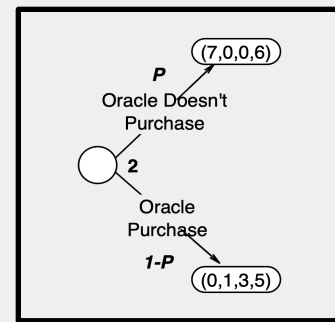
Lastly, Peoplesoft faces a payoff of 0 with probability **(1-P)**, **P** with payoff 7 if they merge J.D. Edwards, and 6 if they do not. To avoid the acquisition, P should not purchase J.D. Edwards.

P   **1-P**
(7,0,0,6) or (0,1,3,5)
Merge JDE
P 1
Doesn't
Merge JDE
(6,0,0,6)
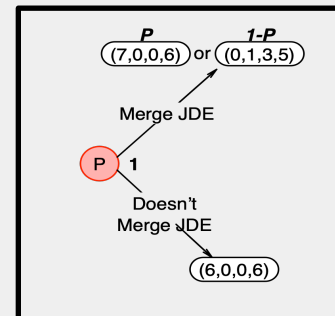
For PeopleSoft, they know there is a probability **P** that Oracle chooses not to purchase them.

$$u_p(Merge\ JDE, Oracle\ Doesn't\ Purchase) = 7 \times (P) + 0 \times (1-p) = 7P$$
$$u_p(Doesn't\ Merge\ JDE) = 6$$
$$u_p(Merge\ JDE, Oracle\ Doesn't\ Purchase) > u_p(Doesn't\ Merge\ JDE) \Rightarrow 7P > 6$$
$$P > \frac{6}{7}$$

Therefore, the solution to the game is:

- If $P < \frac{6}{7}$, (Doesn't Merge JDE Sue WhiteKnight Poison Pill Golden Parachute, Increase Bid Negotiate stakeholder, O win, Doesn't Help).
- If $P > \frac{6}{7}$, (Merge JDE Sue WhiteKnight Poison Pill Golden Parachute, Increase Bid Negotiate stakeholder, O win, Doesn't Help).

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