

Internet Surfing - Quest for Knowledge or Waste of Time: Bargaining Game with Twelve Bottles of Wine

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Personage: Company Manager, Company Board, Internet Club Members/Outsiders and Moderator

It is now almost a common truth that companies need to avoid Internet abuse become significant in their effectiveness of marketing and merchandising efforts. A possible outcome of such efforts might occasionally be a voluntary solution, which results that the most effective employees in the company be keyed up to leave the company. In the following we blow things out of all proportions, but the reader may find it informative to trace the interaction of interests between employees and the company, which takes into account the nature/content of the websites. Contrary to the efficiency of a voluntary solution, what our solution is not, we still hope that we are at right advancing in the direction of self-governing decision-making process.

Suppose, that the manager of a company “Time’s Money” is determined to avoid Internet abuse. Manager hopes to reduce company losses with regard to wasted working hours. To find employees preferences the manager has recommended proceeding with an inspection. Inspection disclosed that employees out of the framework visited some websites distributed in accordance with Table 1:

Table 1

<i>Websites</i>	<i>Stinky Pinkey</i>	<i>Sex Tracker</i>	<i>Flying Crocnet</i>	<i>Sexdogs</i>	<i>Dreamy Times</i>	<i>Total</i>
<i>Empl. nr.1</i>		○	○			2
<i>Empl. nr.2</i>	○	○		○	○	4
<i>Empl. nr.3</i>		○	○	○		3
<i>Empl. nr.4</i>	○	○		○	○	4
<i>Empl. nr.5</i>			○	○		2
<i>Empl. nr.6</i>	○	○	○	○	○	5
<i>Empl. nr.7</i>		○	○			2
<i>Total</i>	3	6	5	5	3	22

The manager asked the employees not to waste their time on “those” activities and they promised not to visit all these ○-websites and to live up totally to 22 promises. The manager believes the employees and is apparently positive that all these ○-websites will disappear from the list in the follow-up inspection as declined ⊗-websites. In addition, the manager explained that all are free to self-govern or to broke their promises without any penalties. In so doing, however, the manager is aware about employees’ unreliable human nature in keeping to their promises. Therefore, the manager decides to award employees who do not waste their time and

projected to organize them into a club of “Internet for Knowledge”. He established a fund for awards payoffs, a box of wine, max 12 bottles, to cover the awards expenses. Follow-up inspection of a particular website, to his knowledge, has its firm price per website, f. e. 1, and his account of follow-up inspections for all websites as to how much credit will be available, for some reason, is under budget constraint = 4.

The *first rule in force* will be to award an employee by a bottle of wine who will not broke his promises at least at k websites among all \circ -websites in the row of the Table 1, as the employee promised to decline. The manager decided not inform in advance how many declined \otimes -websites will be actually chosen in the award decision k . This secret, the manager thinks, will be rather more than less encouraging over rational employees to keep to their promises. However, he thinks, that to preserve the effectiveness of the project, it will be acceptable to circumvent inspection of the websites (columns) with only few \otimes -promises, because of budget constraint for inspection. For this reason to act as the manager desired, i.e. to diminish inspection expenses, by the *second rule in force*, a Moderator of the club will be awarded personally depending on the following rule. Moderator’s award basket will be equal to the number of club members with the lowest number of promises fulfilled among websites (columns) visited by the club members. Moreover, to encourage a collective responsibility as coming members of the club not to “spring off in the long run” out of promises the manager proposed the *third rule in force* that the coming club regulation must emanate a threat: all awards, inclusive Moderator’s personal award, will be lost if some club member does not keep to his promises – still declining less than k websites in the follow-up inspection. Note, that if no one of club members’ keeps to a promise, an outsider might keep to his promise staying away from visiting a particular website, as the outsider promised in the past. These promises fulfilled by outsiders do not count what so ever in Moderator’s award!

Let us look more closely at Moderator’s and club members’ incentives with regard to the awards. It is clear, as we already noticed, that highly rational employees would try to decline rather more than less websites from the list, as they promised, to reduce the risk not to be awarded with a higher k -decision. So, the members of the coming club (members with “*higher moral standards*”) will certainly count on higher k ’s and therefore they will try to prevent others – those with relatively low “*moral standards*”, having relatively lower k ’s – to become the members of the club. Mind that all members and the Moderator personally will loose the awards if a club member in the long run intends to broke too many \otimes -promises, i.e. to fulfill less than k promises. On the other hand, Moderator’s personal award basket might be quite empty if the number k is relatively high. Below we illustrate the last statement by example.

Let us take a look at the Table 1 and let the award will be granted at $k = 1$ or 2 . The manager expects that by fulfilling promises to decline all \circ -websites in Table 1 (all 22 \circ -websites turn into 22 \otimes -websites) every employee will become a member of the club: the most preferable solution by other means, f. e. voluntary. Indeed, each of them is to be awarded by a bottle of wine. Nevertheless, the manager cannot afford the project due to budget constraint: the follow-up inspection price is 5. The Moderator's basket size equals to 3. On the other hand the Moderator may persuade the coming members of the club not to keep to their promises at "Stinke Pinkey" and "Dreamy Times" websites. All club members will still preserve their well-earned awards sounds the Moderator's argument. This solution, as everyone can see, is in interests of both: The Moderator award increases from 3 to 5, and the manager expenses on inspection drop from 5 to 3; only 3 websites have to be inspected instead of 5, see the Table 2 below, in compliance with the budget constraint = 4.

Websites	<i>Sex Tracker</i>	<i>Flying Crocnet</i>	<i>Sexdogs</i>	Total
<i>Empl. nr.1</i>	\otimes	\otimes		2
<i>Empl. nr.2</i>	\otimes		\otimes	2
<i>Empl. nr.3</i>	\otimes	\otimes	\otimes	3
<i>Empl. nr.4</i>	\otimes		\otimes	2
<i>Empl. nr.5</i>		\otimes	\otimes	2
<i>Empl. nr.6</i>	\otimes	\otimes	\otimes	3
<i>Empl. nr.7</i>	\otimes	\otimes		2
<i>Total</i>	6	5	5	16

<i>Sex Tracker</i>	Total
\otimes	1
\otimes	1
\otimes	1
\otimes	1
	0
\otimes	1
\otimes	1
6	6

One can also notice that the total award expenses may now rise up to maximum 12 bottles. However, someone from the board may insist that the proposal to vote for $k = 1$ is undesirable from an additional intersection since the Moderator can misrepresent the members' preferences. Indeed, by this motion the Moderator may offer one bottle to a board member for signaling about the decision $k = 1$. Now, the Moderator by knowing $k = 1$ may propose to the club members not to decline all websites except one – the "Sex Tracker" website. What's more, the Moderator may compensate nr.5 employee losses by one bottle¹. If not, the employee nr.5 is at right to receive an award since he may keep to his promises not to visit websites other than "Sex Tracker", and therefore the employee nr.5 may threaten to send a signal to the board regarding Moderator's fraud. Moderator's award in this case, following the regulation rules in force (see Table 3), will be 6 minus 1 for the signal, and minus 1 for the compensation. That makes 4 what is greater than 3, as the Table 1 suggests. Thus, the board may follow the line of reasoning for the counter argument to the proposal $k = 1$ to insist on the decision $k \geq 3$ in order to prevent Moderator's misrepresentation (fraud).

¹ Quite unpleasant suggestion.

One may argue that $k \geq 3$ yields a grater effect of Internet abuse because of undesirable visits on websites by the employees' nr. 1,3,5 and 7 is now irrelevant. These employees will be excluded from the club of "Internet for Knowledge" and will be free to self-govern or to break promises (without any penalties as we already know) regarding their visits to all these websites once again. However, someone may counter argue that, if the exclusion of employees' nr. 1,3,5 and 7 happens, as anyone can see from the Table 4 below, the remaining employees 2,4 and 6 will still be awarded and will still turn down the total Internet abuse.

Table 4

<i>Internet Websites</i>	<i>Stinkey Pinkey</i>	<i>Sex Ttracker</i>	<i>Flying Crocnet</i>	<i>Sexdogs</i>	<i>Dreamy Times</i>	<i>Total</i>
<i>Empl. nr.2</i>	⊗	⊗		⊗	⊗	4
<i>Empl. nr.4</i>	⊗	⊗		⊗	⊗	4
<i>Empl. nr.6</i>	⊗	⊗	⊗	⊗	⊗	5
<i>Total</i>	3	3	1	3	3	13

Now the Moderator's award basket equals 1, since the employee nr.6 alone prefers to decline "Flying Crocnet". The awards expenses will decrease from 10 to 4. However, the manager may compromise with the Moderator to increase his award to 3, excluding "Flying Crocnet" from the Table 4 inspection list, since the inspection of "Flying Crocnet" with only one employee nr.6 exceeds the budget by 1 anyway. Note that the total expenses for awards increase once again to 6, see Table 5, c.f. the suggestion above not to decline "Stinkey Pinkey" and "Dreamy Times" websites.

Table 5

<i>Websites</i>	<i>Stinkey Pinkey</i>	<i>Sex Ttracker</i>	<i>Sexdogs</i>	<i>Dreamy Times</i>	<i>Total</i>
<i>Empl. nr.2</i>	⊗	⊗	⊗	⊗	4
<i>Empl. nr.4</i>	⊗	⊗	⊗	⊗	4
<i>Empl. nr.6</i>	⊗	⊗	⊗	⊗	4
<i>Total</i>	3	3	3	3	12

Is this decision rational? Suppose not, and let $k = 5$ is the company's board proposal. Now, only the employee nr.6 is a potential participant in the project, see Table 6.

Table 6

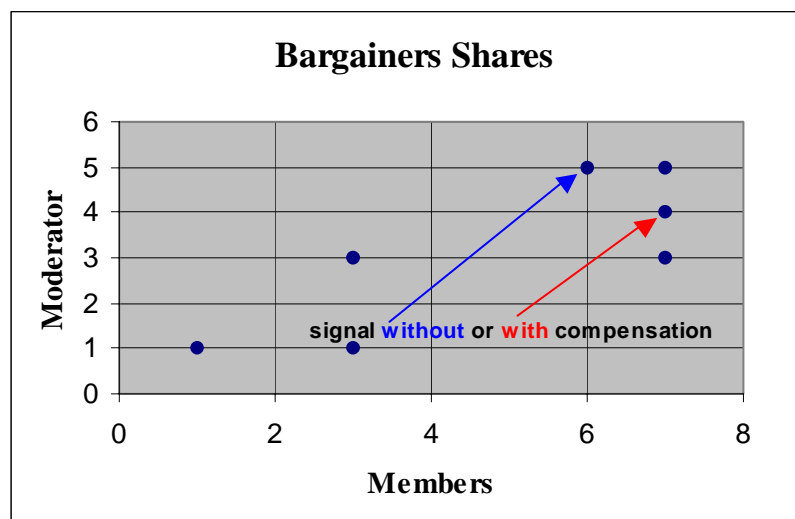
<i>Websites</i>	<i>Stinkey Pinkey</i>	<i>Sex Tracker</i>	<i>Flying Crocnet</i>	<i>Sexdogs</i>	<i>Dreamy Times</i>	<i>Total</i>
<i>Empl. nr.6</i>	⊗	⊗	⊗	⊗	⊗	5
<i>Total</i>	1	1	1	1	1	5

The Moderator may disagree to organize “Internet for Knowledge” club, because his award is only one bottle. From the other side, it is not exactly the manager’s motive to exceed the budget amount on inspection to inspect all 5 websites with only one potential Internet user in keeping to his promises. The manager decides to vote against $k = 5$ proposal at the company’s board. Our game ends here without telling the whole truth what was the decision at the company’s board.²

To reach a conclusion, the basic nature of manager’s difficulty to make a decision lies in between to pick up a row in the following table:

	<i>Club members</i>	<i>Club Moderator</i>	<i>Compensation</i>	<i>Signal</i>	<i>Bottles used</i>	<i>Bottles left</i>	<i>Expenses on inspection</i>
<i>Table 1</i>	7	3	0	0	10	2	5
<i>Table 2</i>	7	5	0	0	12	0	3
<i>Table 3</i>	6	4	1	1	12	0	1
<i>Table 4</i>	3	1	0	0	4	8	5
<i>Table 5</i>	3	3	0	0	6	6	4
<i>Table 6</i>	1	1	0	0	2	10	5

Below we visualize the manager difficulty by a bargaining game to share 12 bottles of wine between the bargainers: (i) – The “Internet for Knowledge” club members, and (ii) – the Moderator of the club.



² For the game theory purists we recommend to turn to the study <http://www.data laundering.com/download/nonjoke.pdf>.