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A NEW TOOL FOR CROWDSOURCING

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Abstract

Many companies see innovation as key to their success and are using idea crowdsourcing to help their companies innovate. However, it is often difficult to motivate individuals to think practically and from management's perspective, and to measure employees' contributions to such systems. A new crowd-sourcing tool that delegates and combines idea generation and the distribution of tasks is described, which largely solves these problems and makes the process of idea generation more measurable.

Keywords: *Crowdsourcing, Software as a Service, principle and agent, motivation, idea generation, task management, risk aversion, delegation, Open Innovation, incentives, performance pay, management.*

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Many companies see innovation as key to their success and are using idea crowdsourcing to help their companies innovate. However, it is often difficult to motivate individuals to think practically and from management's perspective, and to measure employees' contributions to such systems. A new crowd-sourcing tool that delegates and combines idea generation and the distribution of tasks is described, which largely solves these problems and makes the process of idea generation more measurable.

Companies have become increasingly aware of the importance of innovation to their success. Constantly generating new ideas is seen as key to maintaining a competitive advantage and sales. Companies no longer rely on simple 'closed' innovation models with the process of innovation limited to internal R&D departments, but often use crowd-sourcing methods to gather the ideas of employees or even ideas of individuals outside the company.

Common Problems with crowdsourcing tools

If employees are asked to participate in crowdsourcing efforts, the particular nature of ideas present problems for measurement and motivation. Some of these problems are listed below:

(a) The value of an idea is difficult to measure. Only after an idea has been implemented is it possible to assess the value of the idea.

(b) Lower level employees involved in crowdsourcing efforts often propose ideas that are impractical that no one wishes to do or that require too much effort.

(c) Lower level employees often propose ideas that will not become implemented as management would veto them. One reason may be that lower level employees do not consider factors such as cost.

(d) The number of ideas submitted is often a poor measure to assess the participation and effort invested by employees in crowdsourcing. Setting such a metric may encourage employees to submit bad or impractical ideas as described in (b) and (c).

Efforts invested in innovation are often at the expense of a firm's other activities and priorities. It is important to note that setting high incentives for innovation can divert employees away from other important tasks in a company. Milgrom and Roberts argue that the incentives for exerting effort between two activities (in this case idea generation and performing tasks), the intensity of incentives, need to be equal, otherwise employees will spend all their effort on the activity with the higher incentives and no effort on the other activity [1]. Their analysis is summarized in the next two paragraphs.

[1] See Milgrom and Roberts' "Equal Compensation Principle" in Economics, Organization and Management

The effect of incentives on other activities can be explored by assuming an employee is involved in two activities with respective effort levels e1 and e_2. The performance measure the employer measures for activity 1 is z_1, where $z_1 = e_1 + x_1$, and the performance measure for activity 2 is z_2, where $z_2 = e_2 + x_2$, where x_1 and x_2 have expected values $\bar{x}_1$ and $\bar{x}_2$ (x is a random variable representing the fact that no performance measure can ever perfectly measure an employee's level of effort.) α is a constant, the base salary, which an employee must receive in so far as they are assumed to be risk averse. C is the cost the employee bears for exerting effort. (r is another constant not relevant to this analysis.) β_1 is the intensity of incentives for activity 1 and β_2 is the intensity of incentives for activity 2. Milgrom and Roberts go on to analyse the maximization of the employee's "Certain Equivalent" with two activities in order to derive the "equal compensation principle".

$$\text{Employee's Certain Equivalent} = \alpha + \beta_1 (e_1 + \bar{x}_1) + \\ + \beta_2 (e_2 + \bar{x}_2) - C (e_2 + e_2) - \tfrac{1}{2} r \, \text{Var}(\beta_1 x_1 + \beta_2 x_2)$$

"We suppose that the level of effort is restricted to a nonnegative number: e1, e2 ≥ 0. If e1 is strictly positive, then at the maximizing choice for the employee, the derivative of [the Employee's Certain Equivalent] with respect to e1 must be zero, so $\beta_1 = C'(e_1 + e_1)$. Similarly, if e_2 is strictly positive, then $\beta_2 = C'(e_1 + e_1)$. The analysis of the employee's incentives alone establishes that β_1 must equal β_2 if each task is to receive some attention."

A new tool for idea crowdsourcing

Below is described a new crowdsourcing model built and tested by Indigobo Russia LLC, a subsidiary of Indigobo Ltd. David Powell is the CEO of Indigobo Ltd and designed the system described in this article. The company built a Software as a Service online tool, whereby employees created accounts and made submissions on an online discussion forum. Aside from the forum and the actions of other employees, employees were able to see what management approved and the number of points (see below) they had each earned individually.

Employees are asked to submit ideas about how to improve a company or management can set more specific topics. Employees submit ideas by submitting specific 'problems' that need to be solved and 'solutions', proposed actions that solve those problems. They are also able to volunteer for the tasks ('solutions') proposed and have to do the tasks they volunteer for.

Employees only earn points when there is a compete chain: there is a problem, a solution to that problem, a volunteer to complete that solution and a manager approves the solution and the volunteer for this solution. Hence, employees can earn points by idea generation (submitting problems and solutions) or work (volunteering for the tasks and submitting ideas).

The system allows management to motivate employees to generate ideas in an efficient way. The system incentivises individuals only to submit problems which are solvable and only solutions, which individuals are willing to volunteer for. The system motivates employees to be practical.

The system can be adopted, not only for one-off idea crowdsourcing initiatives, but as a system for deciding what to work to do and for dividing up work on a more regular basis. Employees can be rewarded based on the number of points they earn and / or management can set a quota for the number of points that each individual has to earn a day. It can therefore be used as a system to motivate individuals to take their own initiative to decide for themselves what work needs to be done. Management can adapt the incentives to motivate employees to spend more effort on idea generation versus volunteering for tasks and vice versa.

For example, if XP is the number of successful problems submitted, XS is the number of successful solutions submitted and XV is the number of volunteers, which management has approved, the total number of points earned could be a linear function, P(XP) = kP*XP, P(XS) = kS*XS, P(XV) = kV*XV. By increasing kP and kS relative to kV, management can incentivize employees to spend more effort on idea generation.

The system solves two common problems associated with incentive systems, intending to motivate innovation.

First, the relationship between a management and an employee can be described as a principle and agent problem, where management sets up a system to motivate employees to invest effort, but effort is normally more difficult to measure for innovation and idea generation. One method is to compensate individuals by the number of ideas submitted, but this does not encourage employees to submit ideas, which individuals are willing to volunteer for and management approves of. Another method is to compensate individuals for the number of good ideas submitted but this requires much effort on the part of management [1] to assess the value of ideas. The

[1] See Milgrom and Roberts, Economics, Organization and Management, in particular the "Monitoring Intensity Principle", for a more full discussion of the economics behind the optimal level of investment for monitoring effort.

Table 1

Simplified scenarios for idea generation system of Indigobo [1]

Scenario	Employee contributions			Manager approval	Points earned
I	Problem	*No solution given*			0
II	Problem →	Solution	*No volunteers*		0
III	Problem →	Solution →	Volunteer	*No approval*	0
IV	Problem →	Solution →	Volunteer →	*Approved* →	P(1) + S(1) + V(1)

system developed by Indigobo ensures employees are only compensated for ideas, which individuals are willing to volunteer for and management is willing to approve in a highly efficient manner.

Second, it is difficult to set an incentive system to motivate employees to spend the right proportion of time between idea generation and actual tasks. According to Milgrom and Roberts' analysis, if the marginal benefit of spending time on activity A is always higher than activity B, employees will spend all their time on activity A and no time on activity B. However, Indigobo's system is self adjusting. If employees switch all their efforts towards idea generation, but no one volunteers for tasks, no points can be earned as there will be no complete chains. If employees spend all their time volunteering for tasks, there will be no more ideas left for them to volunteer for. The system therefore solves the problem described by Milgrom and Roberts and allows management to fine tune the relative amount of effort spent between idea generation and tasks by adjusting, for example, k_P, k_S and k_V, without the common problem of relative differences in incentives leading employees to spend all their time on one activity. If an employee can earn one point for an idea and one point for volunteering for a task, there is a very good incentive to think up ideas in so far as idea generation may require less effort than performing tasks. The incentive to generate ideas can be increased further by increasing the number of point for volunteering for tasks. But however, incentives are set, this will not lead to the diversion of all effort towards ideas or all effort towards volunteering for tasks as points can only be earned if there is a complete chain, that is, that there are both ideas and people willing to volunteer for them.

Application of the system

To give one example of how such a system was successfully applied, it was used to help the team of an internet company gather ideas about how to improve the company website. In an internet company, working 'lean', i.e., efficiently is key. Employees' time is expensive and spending time on discussions or meetings that bring no tangible value can be costly. Such a system replaces the need for long meetings and encourages employees to focus on easy changes that deliver value, as management will approve those ideas that bring most value. Nevertheless, it can be argued that online systems can never replace face to face meetings as face to face meetings allow important information to be communicated that cannot be communicated online.

One problem with the system is the stress it can bring, particularly if employees are unable to earn points because they cannot think up or find problems and ideas they can perform. Furthermore, middle management can be made to feel insecure that their role of task delegation has been replaced by an online system, particularly if it shows that employees in the hierarchy below them are shown by the system to be better at thinking up ideas about what to do than they are. The first problem can be mitigated by providing template incomplete chains with ready-made problems or problems with solutions that can always be implemented. As such, employees have the choice as to whether to volunteer for these template ideas or think up their own problems and ideas. The second problem about middle management insecurity can be solved by not sharing scores among employees or by hiding who is the author of each idea. Nevertheless, employees are likely to discuss such systems off-line, so political considerations need to be taken into account before implementing such systems.

It is important to consider the dangers of forcing individuals to think up ideas. If employees submit ideas in such a system, this action may not be voluntary. An employee may have a good idea, but may wish to use the action of giving an idea to a company to achieve something, which they believe in or is very

[1] The actual system built by Indigobo has an additional feature creating longer chains. Participants can submit problems with ideas and individuals can submit solutions to these problems: problem->solution->problem->solution (initial problem->solution to initial problem->problem with solution to initial problem->solution to problem with solution to initial problem). Hence, a solution to a problem may have further problems, but this does not mean that this solution is forgotten; if a solution can be found to the problem with the initial solution, the initial solution can be used.

important to them. Requiring employees to earn points on such a system can potentially diminish the power of the employee to be able to lobby for what is important to them. Individuals, who need to earn a salary, do not necessarily have control over the tasks they are required to do; in contrast, their ideas may be precious to them and management does not ordinarily require individuals to submit these ideas. Applying Indigobo's systems, forcing employees to submit ideas, could diminish the power of employees to resist efforts of management to put pressure on them and campaign for issues which are important to individual employees.

Conclusion

In conclusion, company management is increasingly looking to crowdsourcing to drive innovation in order to maintain a competitive advantage and sales. However, it is difficult to encourage employees to focus on generating ideas that are most practical and that management approves of; it is also difficult to measure employee efforts. The Software as a Service crowdsourcing system of Indigobo provides a solution to many of these problems, by combining idea generation with task delegation. Problems arising among employees about insecurity and stress brought by such systems and the internal company political implications, among other issues, need to be considered before implementing such a system.

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НОВЫЙ ИНСТРУМЕНТ ДЛЯ КРАУДСОРСИНГА

Дэвид Пауэлл

Аннотация

Многие компании рассматривают инновации как ключ к успеху и используют идею краудсорсинга для помощи своим компаниям внедрять инновации. Необходим новый инструмент для краудсорсинга, который сочетает в себе идею генерации и распределения задач, будет во многом решать проблемы и сделает процесс генерации идей больше измеримых.

Ключевые слова: *Краудсорсинг, программное обеспечение как сервис, принцип и агент, мотивация, генерация идей, управление задачами, неприятие риска, делегирование, открытые инновации, стимулы, вознаграждения, управления.*

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