Business Models exploiting Collective Wisdom

Kim, Kieun

Korean Internet Research Survey Institute

E-mail : kieun3@ssu.ac.kr

Abstract

The recent successes of systems like Google, Wikipedia and InnoCentive suggest that the time is now ripe for more such systems. Thus, we want to explore these systems and exploit them from a viewpoint of social psychology prior to technological progress. First of all, we examine the difference between 'wisdom of crowds' and 'crowd psychology'. There are two classes, which are for senior management major students. Conditions of two are same, except a class time. Forty five students in one class are tested for this experiment. They form a group with five people and are divided into 9 groups. In a case of a morning class,peer-to-peer evaluations are given to individuals in a class when a group presentation for a final project is given. On the other hand, in a case of afternoon class, peer-to-peer evaluations are given to each group in a class. The result is quite fruitful. The first is that an expert's evaluation for a project agrees with students, who are beginners in this field in the degree of more than 95%. However, in the case of afternoon class, students' group evaluation turns out to agree with an expert's one less than 53%. Morning class experiment result proves the truth of collective intelligence again. It tunrs out independent and confidential opinions are more cost effective and give right answers to questions than group opinions.

1. Web of Crowds

Knowledge-intensive industries are forming an ever-greater part of the world economy. More knowledge workers increase, more knowledge exchange also increases on the web. According to investigation of knowledge exchange on the web[7], knowledge workers in electronic networks of practice like electronic discuss forum, are actively contributing their knowledge and sharing them with strangers despite of no first-hand profits. The reason is that they believe knowledge contributing improves their professional reputations as social capital. Otherwise, helping the others give them pleasure. Knowledge workers do not expect rewards for that and spontaneously offer their knowledge. Likewise, people's minds are activated on the web. While web's role is becoming very important in human-society as well as in knowledge industry, web of crowds is making out many social issues. At this time, we should need to research the web from the perspective of psychology, not the technology[1].

1.1. Theories of Crowd Psychology

Crowd psychology, or social facilitation theory, is a branch of social psychology. Ordinary people can typically gain direct power by acting

collectively. Social scientists have developed several different theories for explaining crowd psychology, and the ways in which the psychology of the crowd differs significantly from the psychology of those individuals within it.

The main idea of Sigmund Freud's crowd behavior theory is that people who are in a crowd act differently towards people than those who are thinking individually[4]. The minds of the group would merge together to form a way of thinking. Each member's enthusiasm would be increased as a result, and one becomes less aware of the true nature of one's actions.

Le Bon's idea that crowds foster anonymity and sometimes generate emotion has become somewhat of a cliche[2]. Yet, it has been contested by some critics, such as Clark McPhail who points out that some studies show that "the madding crowd" does not take on a life of its own, apart from the thoughts and intentions of members. Norris Johnson, after investigating a panic at a 1979 who concert concluded that the crowd was composed of many small groups of people mostly trying to help each other.

Convergence theory holds that crowd behavior is not a product of the crowd itself, but is carried into the crowd by particular individuals. Thus, crowds amount to a convergence of like-minded individuals. In other words, while contagion theory states that crowds cause people to act in a certain way, convergence theory says the opposite: that people who wish to act in a certain way come together to form crowds.

Convergence theory claims that crowd behavior as such is not irrational; rather, people in crowds express existing beliefs and values so that the mob reaction is the rational product of widespread popular feeling.

Ralph Turner and Lewis Killian[6] developed the emergent-norm theory of crowd dynamics. These researchers concede that social behavior is never entirely predictable, but neither are crowds irrational. If similar interests may draw people together, distinctive patterns of behavior may emerge in the crowd itself.

Decision-making, then, plays a major role in crowd behavior, although casual observers of a crowd may not realize it. Crowd behavior reflects the desires of participants, but it is also guided by norms that emerge as the situation unfolds. Emergent-norm theory points out that people in a crowd take on different roles. Some step forward as leaders; others become lieutenants, rank-and-file followers, inactive bystanders or even opponents. Each member in the crowd plays as a significant role.

2. Successful Systems in Knowledge Business

2.1. Google

Google firmly believes it has a framework for figuring out the future. Google's executives don't articulate it this way, but the framework can be found in the title of Shona Brown's book: structured chaos[10]. Indeed, chaos is among the most important aspects of Google's self-image. Understanding how Google thinks about chaos is critical to divining where the company goes next.

"Are lots of questions hanging out there in the market?"

"Sure, Because we don't always have an answer. We're willing to tolerate that ambiguity and chaos because that's where the room is for innovation."

2.2. Wikipedia

Wikipedia is a wiki – a collaborative, open-source medium. Just as human knowledge evolves, so does our wiki coverage of it. Wiki

articles are continually edited and improved over time, and in general this results in an upward trend of quaity and a growing consensus over a fair balanced representation of information.

Indeed, many articles commence their lives as artisan drafts, and it may take a long process of discussion, debate, and argument to yield a consensus form. Other articles may, for a while, become caught up in a heavily unbalanced viewpoint, and it can take some time to restore a balanced consensus. Wikipedia has various processes to reach consense about an article including mechanisms to bring in broader participation to controversial articles.

The ideal Wikipedia article is neutral, referenced, and encyclopedic, containing notable, verifiable knowledge.

The Wikipedia community is largely self-organising, so that anyone may build a reputation as a competent editor and become involved in any role they may choose, subject to peer approval. Individuals often will choose to become involved in specialized tasks, such as reviewing articles at others' request, watching current edits for vandalism, or watching newly created articles for quality control purposes, or similar roles.

2.3. InnoCentive

InnoCentive is an "open innovation" company that takes research and development problems in a broad range of domains such as Engineering, Computer Science, Math, Chemistry, Life Sciences, Physical Sciences and Business, frames them as "challenged problems" and opens them up for anyone to solve them.

InnoCentive calls the scientists who attempt the problem "solvers" and the companies these problems come from as "seekers". Seekers pay a posting fee to post challenged problems to InnoCentive and an appropriate award fee to solvers. Originally, it has been set up as Eli Lilly's in-house innovation incubator since 2000, but most challenged problems haven't been solved in this way and then posted in public. As of 2005, InnoCentive had 34 of these "seekers", which have posted more than 200 "challenges" in 40 scientific disciplines, of which more than 58 had been solved by over 120,000 "solvers". Therefore, this system has been evaluated efficient method incomparable to in-house solver method.

It is noteworthy that problems have been solved by people irrelevant to field of study for the problems. As a result of analyzing data so far, the more the challenged problem tends to be solved successfully, the more the solver's major field is different from the problem's area[9].

3. Experiment

This experiment was conducted in e-business classes in a spring semester 2008. There are two classes, which are for senior management major students. Conditions of two classes are a same subject, a same class size, a same instructor, except a class time. One is opened at morning and the other is at afternoon in a same day. Students' construction is composed of 50~60% management major and 40~50% non-major in each class. None of them in those classes has been taught by this instructor and all of them are the first meeting with this instructor.

An e-business theoretical background has been lectured by an instructor until a mid-term examination. After then, each group discussion has been held for idea about an innovative e-business model. Instead of a final examination, a final project is presented by each group and a peer-to-peer evaluation as well as an instructor's evaluation is considered in a final project score.

Forty five students in one class are tested for this experiment. They form a group with five people and are divided into 9 groups. Members of a group are selected randomly by an instructor. In a case of a morning class, peer-to-peer evaluations are given to individuals in a class when a group presentation for a final project is given. On the other hand, in a case of afternoon class, peer-to-peer evaluations are given to each group in a class.

The result is quite fruitful. The first is that an expert's evaluation for a project agrees with students, who are beginners in this field in the degree of more than 95%. However, in the case of afternoon class, students' group evaluation turns out to agree with an expert's one less than 53%. Morning class experiment result proves the truth of collective intelligence again. It turns out individual opinions are more cost effective and give right answers to questions than group opinions.

4. Conclusion

Results from above experiment verify the following facts. First, solutions from collection of ordinary people's wisdom can surpass ones from an expert in the problem's field. Second, collection of individual's wisdom keeps neutral point of view well and induces into better solutions. Key to a successful knowledge business is how well systems exploit these two facts. Although systems like Google, Wikipedia and InnoCentive make people all over the world communicate and coorporate, they are continually evolving to self-organize into refined-knowledge from raw-information in chaos[3][5][8]. To help users of these systems experience high quality of knowledge, a variety of software assisted systems and automated programs should be involved to manage the quality of control. As knowledge workers are increasing thesedays, knowledge-intensive industry also needs to exploit the fact that knowledge workers are willing to offer their knowledge spontaneously despite of no first-hand profit[7].

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