

The Rise of Social Forecasting

How the Crowd Learned to be Smart

Abstract

Social Forecasting is an Enterprise Crowdsourcing approach for the aggregation of distributed knowledge from employees and experts which is then converted into quantitative business KPIs for use by management. We explore how Social Forecasting has been used in corporations and which mechanisms are behind the excellent forecasting performance of these Social Business tools. We also take a look at the challenges companies face when introducing Social Forecasting and Crowdsourcing tools.

1 Introduction to Social Forecasting

What is Social Forecasting?

Social Forecasting is a Crowdsourcing approach used in companies for forecasting sales, new products or strategic scenarios and KPIs. Social Forecasting is based on the wisdom of the crowds, i.e. your employees contribute their knowledge to the system. The approach has a set of truth-telling incentives which immensely increase the quality of the inputs, which in turn results in excellent predictions by the system.

Historically, Social Forecasting are the evolution and generalization of forecasting with surveys, with Prediction Markets (PM), or with experts. Any forecasting application based on forecasts from at least a dozen human contributors. A key component of Social Forecasting is an incentive mechanism, which induces contributors to provide their best forecast. Here Social Forecasting draws on ideas from Decision Theory and Prediction Markets.

The general idea of such an incentive mechanism can be described as a metaphor for betting (not with real money of course!). Employees bet on outcomes which they forecast, e.g. the sales of product X in Q3. The closer a participant forecasts the actual outcome the more play-money he or she can win. This ensures a very high incentive for each participant to make the most accurate forecast. The system then combines all individual forecasts into one "crowd forecast" which then - in many cases - is more accurate than traditional methods like statistical modelling or Business Intelligence (see examples below). By the way: Those participants who do forecast poorly are automatically weighted lower by a good Social Forecasting system.

The earliest applications of modern Social Forecasting stem from prediction markets in the 1980s at US universities who used small financial markets with a couple of hundred students to test markets as information gathering tools with spectacular results (see Plott and Sunder, 1982; Plott, 2000). In the early 1990s, the Iowa Electronic Markets (IEM), an on-going university project, was launched as a web-based market focused on forecasting election results. The IEM proved remarkably accurate in forecasting election results as compared to traditional surveys and expert judgement (see Table 1).

After these promising scientific results, the late 1990s saw the first early adopters from the corporate world take Social Forecasting into business applications using the Collective Intelligence of employees to forecast business KPIs such as sales (Chen and Plott, 2002), project deadlines (Ortner, 1996) and probabilities for important events, e.g. competitor market entry likelihood (Keller, 2007; Berg, 2007; Cowgill et al., 2009).

	1992	1996	2000	Total
Number of elections	151	157	229	537
Elections where poll was more accurate	28%	13%	24%	22%
Social Forecasting more accurate	72%	87%	76%	78%

Table 1: Comparison of accuracy of polls and Social Forecasting in U.S. election forecasting. (Source: Rietz et al, 2003)

Since then Corporate Social Forecasting and Prediction Markets have come a long way and have seen many implementations. In a recent **McKinsey survey among 3,249 executives worldwide** lists Prediction Markets as one of the top Web2.0 tools used in companies (Bughin and Chui, 2010).

Who is using Social Forecasting?

The number of companies using various Social Forecasting tools has steadily grown with **2010 being a breakthrough year for Social Business tools**. Nowadays, Web 2.0 concepts are being perceived as useful business tools by CEOs and business leaders. Table 2 lists some examples of corporate applications of Social Forecasting from both big and small firms from various industries.

2 Why Social Forecasting works

Social Forecasting is more accurate than other methods, but why is that so? The answer to this question is not a straightforward one because social mechanics are not like physics where B always follows from A. Prediction Markets are a mixture of concepts from Decision Theory (incentive system), Crowdsourcing (utilize the knowledge/skill of many), and Collective Intelligence (turn the knowledge/skill of many into results).

Incentives increase quality of inputs

The fact that participants can win something in a Prediction Market causes them to give more accurate and more truthful answers. This has been scientifically proven (see Luckner, 2007; Sprenger, 2007). As a result, the quality of the inputs to the forecast is much better when using Social Forecasting. In addition to that, participants can weight their input by staking more or less play-money. This additional weighting information further increases the quality of the resulting forecast.

Company	Areas of application
CrowdWorx project: Deutsche Telekom	New product potential, strategic topics
CrowdWorx project: Henkel	Sales forecasts of existing and new products
CrowdWorx project: Tchibo	Sales forecasting in retail
CrowdWorx project: MVS Zeppelin	Forecasting utilization, actual sales prices, marketing campaigns, impact of new technology, and strategic topics
CrowdWorx project: Syngenta	Market forecasts, demand forecasting, business planning
General Electric	Ideation / sourcing and assessment of new ideas. Higher quality of ideas than before.
Ford Motor Company	Sales forecasts, potential new car features, electrification and economic KPIs, commodity prices.
Siemens	Forecasting project deadlines. Two months advance warning – works as an truth-telling early-warning system.
Illy Lilly	Chances of pharmaceutical products and substances in pipeline
Pfizer	Chances of pharmaceutical products and substances in pipeline
Abbott Laboratories	Chances of pharmaceutical products and substances in pipeline, risk management
Best Buy	Sales, new products, new shop openings, launch dates, strategic topics. Higher forecasting accuracy than internal forecasters.
Hewlett Packard	Printer sales. Significantly higher forecasting accuracy than other methods used by HP.
Google	Service utilization, demand forecasting, industry outlook, project deadlines.
Microsoft	Project deadlines. Prediction Market correctly predicts project deadlines.
ElectronicArts	Project management, launch dates, product quality. 50% smaller error than internal forecasts.
Touchstone, Simon & Schuster	Selection of titles for publication
ArcelorMittal	Industry outlook, demand forecasts.
Munich Re	PM measures employee satisfaction for management. Successfully supported 1 year internal re-structuring phase.
Thomson Financial	Assessment of investment opportunities.
Nokia	Increase CRM performance of 1,000 agents across cultures of 174 countries.
Motorola	Product innovation, rate new ideas
Intel	Demand planning, 20% lower error than previous methods
Dentsu	Advertising campaign optimization
Corning	Market growth for LCD TV, price elasticity, predicting industry cycles.
FritoLay	Predicting the success of new product platforms

Table 2: Examples of corporate use of Social Forecasting. (Sources: CrowdWorx projects; NewsFutures, 2010; Berg, 2007; Burnham, 2009; Chen and Plott, 2002; Cowgill et al., 2009; Farmetrics, 2009; Fogarty, 2007; Hengl et al., 2008; Keller, 2007; LaComb, 2007, 2011; Needle, 2011)

Self-adjusting crowd wisdom

Participants who have proven to be more accurate than others are automatically weighted higher by the social mechanism. People who forecast poorly are weighted down. That way the system maximizes the quality of the inputs and the accuracy of the forecasts.

Law of large numbers

A law from mathematical statistics called “Law of Large Numbers” is also at work in Social Forecasting. The law says that the larger the sample, the closer it converges to the true value of the underlying target. In Social Forecasting this law means that errors of many people are cancelled out and due to the incentives (see above) they cancel out in the right direction, i.e. errors cancel out instead of accumulating. This law is well documented in group psychology where it has been shown that group discussion usually reduces the variance of the group members’ opinions (see Sprenger, 2007). Using modern web technologies Social Forecasting enables companies to collect the knowledge of large numbers of people at low cost, which maximizes the effect of the “law of large numbers”.

No politics

Social Forecasting is an effective way to eliminate common individual biases and group biases, such as groupthink, overconfidence, conformity and strategic behavior. In a series of experiments Sprenger et al. (2007) ran group discussions and Prediction Markets both consisting of biased individuals. In the group discussions, the biases remained while the Prediction Market completely eliminated the biases due to the more objective interaction of people via the market and the incentives to disclose information. Influential group members significantly biased the group decisions, while in PMs their influence was eliminated.

Feedback loop

Direct feedback is a major characteristic of discussions. But it is completely missing from surveys, which are traditional way of Crowdsourcing. Social Forecasting has a feedback mechanism, which goes via crowd forecast. The crowd forecast is publicly visible. However, this is more subtle than in a discussion about what could be the right forecast, thus eliminating the impact of opinion leaders and other group biases, which can severely bias an otherwise smart group of people.

Other characteristics

Some more technical but nevertheless accurate explanations of Social Forecasts can be found in the Efficient Market Hypothesis and the theory of marginal traders. For some fascinating experiments with Prediction Markets please refer to Plott and Sunder, 1982, 1988 and Plott, 2000).

3 Best practices in Social Forecasting

To unlock the benefits of Social Forecasting organizations need to consider some basic ground rules. There are six broad success factors of Social Forecasting introduction projects.

Topics

Whether you are using Wikis, blogs, surveys or a Social Forecasting, it is important to have relevant topics. The topics must be relevant both for managers, who are the ultimate users of the social forecasting results, but also for the crowd itself. Luckily, topics which are important for a company’s well-being, such as sales, marketing, strategy, new products etc., will also be of strong interest to both managers and participants because everybody is a stakeholder and there is always at least some involvement for normal employees, too. After all, it is about one’s own company.

Participants

Having chosen the topics of interest, the next step is to select participants who might be knowledgeable about those topics. Participants and topics are very closely related. It is important to have a so called “wise crowd” for the topics at hand. In contrast, a representative sample is not relevant for Social Forecasting methods.

How many participants are needed? This depends on the activity of people and the topics at hand. We can establish some good rules of thumb: 50 participants are needed for 30 forecasts per week (e.g. 10 products in 3 regions per week or month), 100 participants for 60 forecasts, 200 participants for 100 forecasts.

Social Forecasting platform and system

Even when having a well-chosen set of topics and a well-composed crowd that is knowledgeable about these topics, one still needs to make sure that this setup is not spoiled by utilizing an inferior platform. A good platform must be easy to use without destroying the incentives by oversimplifying. Most vendors spent many years in optimizing their user interfaces until these have matured to a level that will ensure that employees of every level can easily use the system without the need for dedicated trainings.

Incentive design

This is one of the key design decisions of any Crowdsourcing initiative. A professional vendor should provide consulting in this area based on his practical experience in order to guide a client through the setup of a good incentive scheme. The impact of the incentive scheme should not be underestimated, as shown in a study by Luckner (2007) who demonstrates how the

same Prediction Market can deliver different results based on the incentive schemes used. Monetary or material prizes are not the only way to incentivize people. Recognition and other social factors have proven to be strong incentives, too. While rankings are a good idea in theory, the modern way to incentivize people is by lotteries, levels and other concepts coming from the world of games. This move towards individual incentive schemes is often referred to as gamification.

Communication

When a Crowdsourcing system is ready to be launched, one cannot simply switch it on like a machine. Since Social Forecasting is a social phenomenon, one needs to “oil the social machine” and in this case the oil is communication. One has to introduce the system to the target group with simple but well-targeted information, such as newsletters, mailings, blog entries etc. This may sound simple but again the tone and timing of the communication will be important for the people to accept the new initiative.

Management support

We all know that a corporate project cannot be run without a dedicated high-level sponsor. Here the new world of democratic social media intersects with the well-established rules of corporate organization. A sponsor must clearly see the business use and benefits of the initiative and not only support it because wikis and blogs are currently “hot”. Management often requires some measurable output and this is where Social Forecasting excels. Unlike wikis and blogs, Social Forecasting does not create endless amounts of text and data. Instead, it bundles the knowledge from participants and turns it into **quantitative KPIs**. The quality of these crowd-generated numbers can be easily assessed with traditional tools, e.g. forecasting error analysis, which gives a very clear measurement on the business impact of Social Forecasting.

4 “I still don’t believe Social Forecasting works!”

There are many potential objections to the concept of Social Forecasting, which need to be heard and responded to. The two major objections often voiced are Herding and Manipulation of results.

Herding

Herding refers to the phenomenon of people not following their own opinion but just following the crowd forecast. In Social Forecasting herding is prevented by two mechanisms. First, when participants know there is an outside event, e.g. sales figures coming in next month, they know that the other market

players are just as dependent on it as they are. Those who simply follow the crowd forecast will lose play-money because herding will not have any impact on the outside event. Hence participants which herd are quickly weeded out by the system.

Secondly: Sometimes when a Social Forecast is not dependent on an outside event, e.g. when comparing new products there is no objective event by which to determine which product would be most successful in the market. In these cases herding is controlled by other mechanism, e.g. limiting the number of inputs per user to, say, three forecasts per day and by hiding the crowd forecast so that nobody can herd. Even when the crowd forecast is hidden, participants will still have an incentive to make their best forecast since they have no other alternative strategy to maximize their chance to get the incentives.

Manipulation

A very interesting objection to Social Forecasting is that it can be easily manipulated, similar to stock exchanges. Even if there are people who try to manipulate the mechanism, the incentive scheme makes sure that there are many more people who will correct wrong forecasts, because they know that they will profit much more by making an accurate forecast.

Christiansen (2007) showed that **manipulation attempts in Prediction Markets survive only for 5 to 20 minutes**. After that the manipulation is completely corrected and the manipulators are discouraged due to the losses they incur.

Those who keep manipulating the crowd forecast are quickly washed out by the system because their low accuracy causes them to lose all their play money and so they are unable to influence future forecasts anymore.

5 “If Social Forecasting works so well why is it not used all the time?”

Social Forecasting is new. The first corporate applications are from the mid 1990ies and only after the year 2000 has Social Forecasting been able to make its first steps into the world of corporate decision support (see Table 2). Therefore, Social Forecasting is still a niche topic and not many executives are aware that this amazing Crowdsourcing method exists.

A lack of trained consultants

Widespread adoption also requires trained professionals who know how to run Enterprise 2.0 tools. Many are trained in survey design but few are trained in Social Forecasting. Even though both approaches have similarities, Social Forecasting

require less knowledge about statistics but more skills in community management and incentive design.

Anxiety against Social Forecasting

Another challenge faced by Social Forecasting is the resistance it encounters from internal experts and forecasters. Sometimes a corporate forecaster will think that Social Forecasting is there to replace him. This is not true of course. Just like ERP systems have not replaced forecasters, Social Forecasting will not make experts obsolete. Social results still have to be used by human experts who interpret, judge and decide what to do next.

Openness

Social Forecasting requires certain private information, e.g. past sales data, to be disclosed to employees (not to the public!) in order to enable them to make an informed forecast. Many companies are not ready for this and will therefore refrain from introducing Social Forecasting. However, as Web 2.0 tools are increasingly making inroads into companies, information sharing will become a normal part of business and those who don't follow will be suffering competitive disadvantages.

As information sharing and Social Business become established practices, we can expect to also see the use of Social Forecasting to continue its rise in the very near future.

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Contact

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Berlin, Germany

Rotherstr. 18
10245 Berlin
Germany
Tel: +49-30-51300-211
Fax: +49-30-41721-281

Munich, Germany

Isartalstraße 30
82008 Munich (Unterhaching)
Germany
Tel: +49-89-33982-510
Fax: +49-89-61-066-793

Boston, USA

17 Stoneclove Rd.
Wellesley (Boston), MA 02482
Tel: +1-617-763-8082
Fax: +1-781-489-5595

Poznan, Poland

ul. Fredry 1
61-701 Poznan
Poland
Tel: +48-61-88577-00
Fax: +48-61-88577-15

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