



Harnessing the wisdom of crowds: Decision spaces for prediction markets



Patrick Buckley

Kemmy Business School, University of Limerick, Plassey, Limerick, Ireland

KEYWORDS

Prediction markets;
Organizational decision making;
Forecasting;
Wisdom of crowds;
Group decision making;
Decision engineering

Abstract The increased metabolism of business in the modern world has served to heighten both the frequency and the difficulty of organizational decision making. Practitioners and academics are constantly looking for decision-making mechanisms that can be used to address these challenges. One recently emerged mechanism is prediction markets: a group decision-making tool that uses a market mechanism to rapidly aggregate information held by large, diverse groups of participants. Prediction markets have a number of benefits and have been demonstrably successful in a number of contexts; however, it is important to recognize that they are suited to some types of decisions and contexts but not to others. This article examines the benefits of prediction markets and develops a framework that can be used to identify in which situations prediction markets can be profitably deployed within organizations. It also provides a roadmap for practitioners to use to guide their own organizational deployment of prediction markets.

© 2015 Kelley School of Business, Indiana University. Published by Elsevier Inc. All rights reserved.

1. Harnessing the wisdom of crowds

Decision making is a central pillar of management (Mintzberg, 1980). The complexity of organizational decision making is constantly increasing due to the faster metabolism of business, caused by a wide variety of factors such as heightened competition; globalization; the emergence of new technologies; accelerating innovation; and new regulatory, environmental, and ethical constraints (Haase & Franco, 2011).

Most organizations employ the expert judgment of human beings to make decisions about complex systems. However, the accuracy and reliability of individuals is restricted by cognitive, physiological, and psychological limitations (Simon, 1997). Group decision making can address some of the problems associated with individual decision making, and thus offers a path to improved decision making. Group decision making is seen as being particularly useful in situations that require judgments to be made or in situations where information must be aggregated from sources widely separated by time and space.

However, group decision making is also subject to limitations. First, as groups get larger, they tend to

E-mail address: patrick.buckley@ul.ie

get progressively more unwieldy and difficult to manage. This tends to limit the size of effective decision-making groups to between four and seven people. In turn, limiting the number of people participating limits the amount of information, knowledge, and opinions available to the group, thus counteracting the strengths of group decision making. Second, group decision making is subject to socially induced phenomena such as group think (Janis & Mann, 1979), information cascades (Boddy, 2005), and group polarization (Myers & Bishop, 1971).

The fundamental importance of decision making and the limitations of existing techniques motivate a continuing search for improved tools and techniques (Jalonen & Lönnqvist, 2009). This article aims to highlight to practitioners the features and potential utility of a novel group decision-making technique called a prediction market. Prediction markets have structural features that enable them to overcome some of the limitations associated with more traditional methods. By using a market mechanism to collect and aggregate opinions, prediction markets can avoid the scaling issues associated with more traditional forms of group decision making. In addition, by using limited communication channels and incentives for truthful revelations, they can reduce the impact of socially induced biases. These features mean that prediction markets are a potentially powerful decision-making tool in an organization's arsenal.

Providing practitioners with innovative decision-making methodologies is an important step in making organizational decision making more efficient and effective. However, improving organizational decision making also entails understanding the context and nature of the decision. Using an appropriate decision-making mechanism will improve decision quality; equally however, the use of a novel but inappropriate technique may adversely affect decision quality through errors and misplaced confidence in faulty conclusions. Until now, there has been insufficient work identifying which decision contexts are appropriate for prediction markets. This article contributes by presenting a framework that allows managers and practitioners to evaluate the suitability of prediction markets for a particular decision-making situation.

We begin by introducing prediction markets and positioning them as group decision-making tools. We identify their strengths and describe current practical applications of prediction markets. We then develop a framework that identifies for what type of decisions prediction markets are useful. Finally, we embed this framework in a larger process which describes how organizations can operationalize the use of prediction markets.

2. Introducing prediction markets

As defined by Tziralis and Tatsiopoulos (2007, p. 75), prediction markets are “markets that are designed and run for the primary purpose of mining and aggregating information scattered among traders and subsequently using this information in the form of market values in order to make predictions about specific future events.” The theoretical roots of prediction markets can be found in Hayek's conceptualization of markets as near perfect transmitters of information (Hayek, 1945). While it is relatively easy to point to specific examples of market failure, in general, speculative markets such as those in stocks, commodities, and futures options do a credible if imperfect job of aggregating relevant information into market prices (Hanson, 2007). This position is backed by a substantial body of empirical evidence (Kolb, 1997; Malkiel, 2003, 2005; Roll, 1984).

A prediction market is created by offering for sale to a group of participants a contract on the outcome of a future event of interest. For example, suppose an organization wishes to forecast whether or not a project will reach its next milestone on time. The organization could create a contract that will pay a holder \$1 on the date of the milestone if the milestone is reached or \$0 otherwise. The organization would set the initial price of the contract at 50 cents and then offer it for sale to individuals participating in the project. Under these circumstances, if an individual believes that the project is likely to reach its milestone on time, he/she would buy the contract in the expectation of a greater reward in the future. Equally, if a rational individual believes the project will not reach its milestone, he/she would sell (or ‘short’) the contract. This buying and selling of contracts will have the effect of moving the price of the contract.

This two-outcome model can be easily extended to allow for the creation of contracts across a range of disjoint outcomes. For example, a prediction market can be created wherein participants are asked to forecast what will be the most commercially successful of a range of products. They can also be used to allow participants to forecast values rather than select from a particular set of options; for example, participants may be asked to forecast the volume of sales of a particular product.

Prediction markets differ from traditional financial markets in two important ways. First, participants trade in contracts whose value is not inherent, but rather dependent upon the outcome of a future uncertain event (Hall, 2010). In a prediction market, the trade of contracts allows participants to exchange information. The trade of

Download English Version:

<https://daneshyari.com/en/article/1013985>

Download Persian Version:

<https://daneshyari.com/article/1013985>

[Daneshyari.com](https://daneshyari.com)