Enterprise 2.0 and the Knowledge Problem

Christian G. Warden

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Abstract

Enterprise 2.0 is a term coined by Andrew McAfee to describe the use of “Web 2.0 technologies by businesses in pursuit of their goals.” These tools are designed for collaboration, and therefore facilitate the transfer of knowledge. Because firms face a problem in collocating knowledge and decision rights, new technologies that reduce the costs of transferring knowledge can assist firms in mimicking efficiencies of the market. This paper describes how specific tools can be used to help reduce these costs.

1 Introduction

Enterprise 2.0 is a term coined by Andrew McAfee to describe the use of “Web 2.0 technologies by businesses in pursuit of their goals.” This paper explores Enterprise 2.0 from an industrial organization perspective. If a company’s goal is to address the knowledge problem, to what extent does Enterprise 2.0 help it reach that goal?

Coordination within a firm poses a problem that does not exist among market participants. Hayek [1945] explained how markets provide coordination among individuals that have different knowledge. No individual could gather, much less comprehend, all of the knowledge within a society. Nonetheless, the market allows the information dispersed throughout society to be used to coordinate resources and allow individuals to achieve their goals. Each individual acts on his knowledge of the “particular circumstances of time and place.”

Jensen and Meckling [1992] describes how it is that the individuals with the knowledge needed to make a particular decision come to have the right to make that decision. In the market, decision rights are alienable. These rights can be sold, and the owner of the right keeps the proceeds that accrue from exercising or selling the right. This tends to result in the right to make a decision becoming owned by the individual with the best knowledge on how to exercise that right because it will be of highest value to him, and therefore worthwhile for him to purchase it from another owner.

It is the inalienability of decision rights that poses a problem for decision making within a firm. Firms seeking to reproduce the efficiency of markets by aligning decision rights and knowledge cannot do so by making decision rights alienable. Employees do not have the right to sell their positions, nor are they
residual claimants to the income generated as a result of their decision-making within the firm. Therefore, the firm must find alternative methods of solving this knowledge problem. Furthermore, because the employee with a decision right is not entitled to the full proceeds from making a good decision, nor does he suffer the full loss that arises from making a wrong decision, the decision-maker may not have the incentives to make the decision that is in the best interest of the firm. The firm must devise a method of aligning the incentives of employees with decision rights to solve the incentive problem [Jensen and Meckling, 1992].

In this paper, we focus on the knowledge problem. How can the new information technologies tools collectively called Enterprise 2.0 help firms solve this problem? We focus primarily on how the transfer of knowledge to the decision-maker can be made more efficient. This is the MIS solution. An alternative solution to the knowledge problem is to transfer the decision rights to the holder of the knowledge. This is known as the organizational design solution [Holian, 2007]. We will discuss the impact Enterprise 2.0 has on organizational design briefly.

1.1 Technology and the Knowledge Problem

First, we must understand why bringing together knowledge and decision rights within a firm might be a problem. Jensen and Meckling describe two types of knowledge: specific knowledge, which is costly to transmit, and general knowledge, which is less costly. Firms for which specific knowledge is important to decision-making will tend to be more decentralized so as to lower knowledge-transfer costs.

One of the determinants of the cost of transferring knowledge is technology. The use of Enterprise 2.0 Technologies can reduce the cost of transferring knowledge. One of the implications of this is that firms that adopt Enterprise 2.0 tools should tend to become more centralized. This conclusion assumes that the technology equally improves the movement of knowledge up and down the organization. If instead, it primarily reduces the cost of moving information down the organization, it may foster decentralization. Furthermore, the same tools may also assist in transferring information helpful to management in assigning decision rights, and thereby encourage decentralization. The empirical question of which effect dominates could be a future area of research.

2 Enterprise 2.0

What is Enterprise 2.0? Enterprise 2.0 is the use of Web 2.0 software within a firm. Therefore, to understand Enterprise 2.0, it is first important to understand what Web 2.0 is. Web 2.0 describes web-based applications that bring TOGETHER communities for communication and interaction [Mcafee, 2009]. Examples of Web 2.0 software include blogs that bring together people for discussion, social networks like Facebook, and wikis like Wikipedia that bring together people to document and share knowledge. Enterprise 2.0 is the use of
such collaborative software within the firm. Our goal is to understand how this software can be used to help firms solve the knowledge problem.

McAfee describes six characteristics of Enterprise 2.0 technology that differentiate it from earlier IT tools. They are search, link, authoring, tags, extensions, and signals, to which he gives the acronym SLATES. Search describes the fact that searching for information is the primary way of locating it, in contrast to using a predefined information hierarchy such as a directory. The use of Google rather than DMOZ to locate information is an example of search. Link describes the ability to connect different pieces of information together, typically by linking between web pages. Authoring means that everyone is a potential author; the ability to publish is not tightly controlled. Tags are end-user chosen words or phrases used to classify information. Tags allow information to be categorized in an ad hoc manner rather than requiring using a predefined taxonomy. Extensions are an application of machine learning to suggest resources to a user based on their use of other resources. If you are interested in subject A, you may also want to read about subject B. Recommendations is a clearer description of the concept than extensions. Since it yields a Web 2.0-friendly acronym, SLATRS, we will use this term instead. Lastly, signals are a way of notifying someone that knew information that they might be interested in is available. RSS is an example of signals.

Tools that support SLATES allow a spontaneous order to arise from the knowledge held by the users of the tools and the information captured within them. Many users can enter different types of information, even contradictory information, into a wiki, for example. The use of tagging and linking by other users will allow the information that is most useful within the firm and most likely to be factually correct to rise to the top of the results of searches conducted by yet other users. Signals created from the software can notify individuals throughout the firm that useful knowledge is being created or captured.

The order created is spontaneous in that the people that tag or link to content need not be concerned with the structure being created by the interaction of their activities with those of others. Simply noting that one found a specific web page useful contributes to the structure of knowledge within the firm.

3 The Value of Enterprise 2.0

McAfee draws on sociologist Mark Granovetter’s work on tie strength to explain the value of Enterprise 2.0 within a firm. Tie strength is the closeness and depth of professional relationships. Granovetter found that groups of close friends clump together, and that weak ties between individuals in different tightly knit networks bridge those networks. Enterprise 2.0 tools can be used to support collaboration among groups bound by strong ties, maintain existing weak ties between groups, and identify possible links that could be created between unlinked groups to fill “structural holes”.

McAfee uses Facebook as an example of a Web 2.0 site that is used to maintain weak ties. Although not traditionally viewed as a corporate tool, McAfee
provides a case study of Serena, which replaced its intranet with Facebook. In this example, Enterprise 2.0 can be used to share knowledge about the tasks that employees are working on throughout the company. One software developer might update her status to “is learning Erlang. Building a prototype messaging server this week.”, which could alert another employee in a different department about a potential collaborator on future project.

3.1 Addressing the Knowledge Problem

Although the Facebook example does allow the maintenance of social ties, the value of such tools to the firm is clearer when thinking in terms of the use of Enterprise 2.0 software to reduce knowledge transfer costs.

The remainder of this paper looks at multiple reasons why knowledge may be costly to transmit, and how Enterprise 2.0 tools can reduce those costs.

One obvious reason for costly knowledge transfer is that it may be costly to find the knowledge. Knowledge created throughout an organization may remain widely dispersed or may be stored in a way that fails to make later search and retrieval easy. With corporate intranets or knowledge management systems, publishing may be restricted to certain employees who act as gatekeepers and are responsible for approving and editing content created by other employees. If the burden of publishing is too high, knowledge that gets created may never be shared. Both blogs and wikis address this cost of authoring issue because they can both allow widespread authorship. Both platforms also allow for the refinement of information in slightly different ways. Wikis allow individuals other than the original other to edit documentation, while blogs allow commenting on another author’s posts.

Once knowledge has been created and shared through publishing, it still must be found. Linking and tagging both guide future searches for the information, and recommendations and signals assist in sharing knowledge to individuals that might be interested in it, but are not explicitly looking for it.

Another possible cost associated with the transfer of specific knowledge may be the finding out who has the knowledge needed. Even with Enterprise 2.0 tools deployed, the holder of a specific piece of knowledge may not have realized the value of sharing it yet. If the person that needs the knowledge could easily identify people likely to possess it, the total time and cost of acquiring the knowledge is reduced. The use of blogs can be useful in this case because they not only distribute information, but generate meta-information by building a reputation for the author as well. The fact that an individual has published weekly posts on a specific topic that has drawn frequent comments suggests that the individual may be an expert on the topic, and a good source of knowledge about related issues.

Having located a source of expert knowledge on a particular topic, the firm may also consider giving the knowledgeable individual decision-rights over their area of expertise. This would be an example of the organizational design solution to the knowledge problem, mentioned above.
In some cases, there may not be a single source of knowledge. Some knowledge may be dispersed, and only valuable in a combined matter. For example, in a market, there are many participants with different preferences. Imagine an individual trying to collect the preferences of all of the individuals in even a small town in order to estimate what the price of a banana should be. In this case, it is not simply a matter of finding the individual with the right knowledge. Rather, a distributed decision-making structure may be necessary [Bonabeau, 2009]. Prediction markets are one type of Enterprise 2.0 system that can bring people together to create new knowledge from widely-dispersed knowledge the way prices work as a form of knowledge in markets.

One nice feature of prices is that they can change quickly and transmit knowledge of change in the supply or demand for goods quickly to market participants. Legacy knowledge management systems in use within firms may lack the functionality to track changes to knowledge, make changes quickly, and notify users that information has changed. The firm may bear the cost of making decisions based on outdated information. The open nature of tools like wikis a repository of knowledge be updated quickly, and for notifications to be distributed through subscriptions to content.

4 Conclusion

Enterprise 2.0 is a promising development in information technology with respect to question of optimal firm structure and operation. Further work is needed to investigate how these tools may contribute to assigning decision rights and possibly addressing the incentive problem as well.

References


