DECISION SUPPORT AND INTER-ORGANIZATIONAL COMMUNICATION IN SMALL BUSINESSES: A CASE STUDY

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ABSTRACT

There has been very limited research in the area of small business decision making. Many issues remain unexamined and one important issue is the communication processes underlying the inter-organizational decision-making in small businesses. In the trend of globalization, small businesses build networks and alliances with other businesses to tap into external resources. Considering this web of relationships, decisions of small businesses are often made in an inter-organizational communication and negotiation process. To examine how technology can support such communication process in decision-making, a case study was conducted and problems are identified, including information ambiguity and conflicting understanding, trust issue, domination of bigger companies, and communication workload problem. For each problem, preliminary technological solutions are proposed.

Keywords: decision-making, inter-organizational communication, decision-making support

Introduction

Small businesses are an important and integral part of every nation’s economy [1]. In the past decade, with the increase of evidence in the awareness and investment from small businesses in information technologies, there has been significant convergence of IS research and small business research. However, a number of important areas are under-researched [2]. One area of small business IS research that warrants more exploration from academicians is inter-organizational decision support. In the new business environment of increasingly globalization and more-than-ever intensive competition, small businesses, typically with limited resources, build networks and alliances with other businesses to expand their operation in a larger market with the help of these external resources. A decision in one small business is influenced by other businesses in their network and the new decision-making environment demands collaboration and communication between different businesses. Therefore, it is also important to develop an understanding how the communication-intensive decision-making in small business can be facilitated by decision support systems. To that end, this paper aims to answer this question: what problems actually exist in the inter-organizational communication processes underlying interactive decision-making in small businesses and how can such problems be overcome from a technological perspective.

The organization of this paper is as follows: first, relevant literature is reviewed. Then, a case study in a small business with a network of business partners is presented. Typical
communication-intensive decision-making scenarios are described; problems and issues identified and preliminary analyses are done in terms of how information technologies help or fail to solve these problems. The paper concludes with a discussion of the contribution and limitation of this paper and suggestion for future research.

Literature Review

This paper defines Small Businesses as independently owned and operated and is not dominant in its field of operation [3]. Past small business decision support research has focused on introducing operational management principles and theories into these businesses. Model-based decision support systems were found to improve the efficiency and quality of decision-making in financial planning and inventory management [4] [5] and other management activities. Some researchers have attempted to find ways to use rational decision-making methods to complement the intuitive way of decision-making [6]. In addition, several studies have been done on the adoption and implementation of DSS in small businesses [7] [8]. At the same time, industry practitioners have called for the use of software that is more powerful and additional applications in small businesses [9]. However, from a technology determinism perspective, they along with the adoption research stream have assumed the benefits inherent in the use of technology, failing to examine the complexity of these businesses.

Small businesses are considered characterized by a flat organizational hierarchy and close proximity to coworkers, which is believed to contribute to effective communication practices, often comprised of informal channels [10], and typically carried out face-to-face as the need arises rather than through formal communication channels such scheduled meetings. Nonetheless, it has been found that as a small business grows, especially into a global market, traditional face-to-face is not sufficient.

Small enterprises are found to be increasingly active in international markets [11]. In addition, a growing body of research has found the trend of building business-oriented relationships outside organizational boundaries of the business [12]. The web of external alliances provides a wide variety of tangible and intangible benefits. Businesses use these external relationships to tap into resources to extend their reach. More and more, companies are coming to see their business processes in a wider context where many companies contribute complementarily to achievement of business goals. In this light, the companies have to integrate business partners into effective information and communication processes. Moreover, as decisions affect a small business’ partners in the network and many decisions need to be carried out collectively by the businesses in the network, external communication becomes an integral part of decision-making. In the resulting communication process, information is exchanged, understanding is established and commitment is promised. Such processes cross-organizational boundaries and geographical distances and have to be facilitated by information and communication technologies.

Research Method

As a first attempt in this research field, this paper is not intended to create theory but perform a descriptive study of this issue and provide a preliminary analysis. A case study was conducted to identify the actual problems in the decision process this paper targets.
Overview of the Study Site

Company A is an E-commerce retailer. It sells brand-name gifts and its customer base consists of customers from all over the world. It has six employees and one owner-manager. The owner-manager, along with another manager, conducts all managerial activities in the company and is involved with the daily operations of the company. The annual sales of the company are under one million dollars and the company is actively seeking new business partners to expand its business. The company works closely with its more than 50 suppliers and partners in its business operation. Decisions about the company’s product and service offering, and pricing and marketing strategy are largely influenced by the information provided by and the ability to cooperate with the suppliers.

Data Collection Method and Analysis

A case study should use multiple data collection methods so results collected through different channels can be used to triangulate in order to improve the objectivity and validity of analysis and conclusions [13]. In this case study, three data collection methods were used: 1) in-depth review with five managers in company A and its partner businesses about their decision-making activities, 2) observation of Company A managers in decision-making, 3) communication records including IM transcripts and emails. The data was coded using keyword coding, patterns about problems that occurred during the communications are induced, and reasons are explored. In the following section, the results about the problems and the reasons behind the problems are presented and illustrated by typical scenarios.

Problems, Reasons and Solutions

First, information ambiguity and understanding conflicts

The message conveyed is ambiguous and the decision makers from different parties may interpret the message in more than one way. There is no shared understanding of what the message means. The owner-manager gave an example about this problem: Company A needed to decide on the price on some new laptop models. The supplier of the laptops emailed the spreadsheet containing the prices upon the request of Company A. There were three types of prices in the spreadsheet: market price, retail price and wholesale price. The manager of Company A determined that the “market price” is the price other retailers in the market use and the “retail price” is the cost Company A needs to pay the supplier. It turned out that “retail price” was actually the dominant price on the market and “wholesale price” is the cost Company A needs to pay. The problem occurred mainly because of information asymmetry and the poor way information was presented. The supplier is in a country where the retailers usually list an “official” market price but actually sell the product at a discounted price. Since this becomes the standard practice of the retailers, the actual market price is the “discounted” retail price. However, Company A was not aware of such a phenomenon. In addition, the prices are presented as mere numbers without any context. Thereby lacking the additional cues through which the managers of Company A would have gained a better understanding. This problem is a common issue, as the businesses are in different market positions and knowledge of different companies is developed in different business environments and social cultures. The consequence
of this problem can be highly costly if critical business decisions are made with wrong interpretation. It can also slow down the decision making process. It takes time for the managers to find out about the problem and revise the decision. To solve the problem, technology should facilitate the awareness of the context where information is created. No GDSS or CSCW studies have been found addressing this problem. Some communication theories have touched on the issue. There is a relationship between medium and task types based on information richness [14]. Negotiation and cognitive task types exhibit equivocality and uncertainty phenomena. To reduce equivocality, richer communication should be used. Thus it can be inferred that to solve information ambiguity problems, increasing the bandwidth of communication technologies in terms of the capability to convey multiple cues will help. For instance, automatic hyperlinks can be added into the spreadsheet so documents, videos, or audio files, which provide additional background information on an item in the spreadsheet, can be retrieved. However, this preliminary solution only provides a starting point. How such rich communication media should be actually integrated in the whole decision processes is still an open question. Visualization tools can be used to present the information in a way that managers can intuitively understand the information with little cognitive effort. Many DSS tools come with a set of visualization functions. In addition, it would be useful if the visualized results from one company’s DSS can be read by commonly available application that the manager of another company may use and be used directly as input to the other company’s DSS. Recent developments in semantic integration also shed light on the solution of the information ambiguity problem. When ambiguity arises because of difference in the contexts of information receiver and sender, shared ontology can be developed to represent, process, and reconcile heterogeneous data semantics. However, to date ontology sharing technology only address differences in object context variables such as currency, weight measurements etc. In the small business inter-organizational decision-making process, communication barriers exist in the sharing of subjective data such as managers’ judgments and evaluation.

Second, trust problem

The trust problem occurs when there are conflicts of interests. Conflicts arise because each business acts in an individually rational way for its own good or seeks to maximize its own utility. The manager of Company A depicted such an example: Company A needed to decide on which new models of a brand-name watch would be added to their E-commerce website. They asked their supplier what options the supplier could provide. The supplier wanted to make as much profit as possible. Even though they could not guarantee the stable supply of some models, they withheld this information from Company A. Instead, they told Company A to market all the new models. Later on, Company A had to remove some models from their website after several experiences where the supplier did not have the product in stock. Reputation and credibility of Company A were damaged in these incidents. In addressing this problem, Smoliar & Sprague [15] propose that technology can be used to collect and visualize the prevalent opinions that are hold by most parties in the negotiation. DeSanctis & Gallupe [16] suggest a similar solution where the opinions of team members are aggregated and presented in a way that everyone in the team can see. Besides that, the author believes increasing external transparency would help. Street & Meister [17] explain that external transparency is the outcome of communication behaviors directed outside the organization. From the supply chain management perspective, information exchange between supply chain partners [18] is described as a type of transparency.
One type of information that can be made transparent is cost. With such transparency, one company will trust the truthfulness of the information provided by other companies and will be able to collect information the other companies unintentionally or intentionally omits to transmit. The positive role of IS in increasing transparency has been highlighted [19]. However, detailed solutions on increasing transparency have not been studied. The author proposes some additional features of DSS may increase external transparency. For instance, a list of businesses which will be impacted by the decisions is recorded in the DSS; when a decision is being made, the DSS also models the impact on the other businesses and summary reports are automatically sent to them.

Third, domination of larger partners.

Larger partners possess dominant power over smaller ones in the supply chain and are often unwilling to reconcile in cases of interest conflicts or to cooperate with other businesses when collective efforts are required. The managers of Company A complained about some of their bigger partners with the following example: High-quality service is one of the primary strategies Company A deploys and the services have distinguished Company A from its competitors. The actual fulfillment of these services often falls onto the shoulder of the company’s suppliers. However, when deciding on what service the company can provide with pearl jewelry products, the manager found it hard to negotiate with the pearl jewelry supplier, the largest pearl jeweler in the country, even when Company A is willing to pay a premium for the services. This issue is similar to the “authority” issue Smoliar & Sprague posit, in that bigger companies generally have more authority in negotiation. Traditional GDSS addresses this issue by implementing anonymity feature in hope that participants will not be judged by their organizational position or expertise and social barriers to participation will be removed. However, this approach will not work in the context of the small business problem as the domination of bigger players cannot be overlooked or circumvented. To address this problem, technological support must be designed in the context of the relationship of bigger companies and smaller companies. Some artificial intelligence research has been used to find ways to reduce the influence of domination. For example, work practices may be mediated by conversational agents as a move away from authority figures [20].

Fourth, communication workload

Most of the decision-making, due to the negotiation nature, is communication intensive. Also because of the volatile business environment, decisions are reevaluated frequently and new rounds of negation begun. This creates large volume of communication workload and results in communication fatigue. As the manager of Company A explained: For each new product or service, he has to negotiate with his suppliers and the negotiation lasts intermittently over a few days before a final consensus can be reached. Sometimes, he simply gets tired of the communication and makes a hasty decision. To deal with this problem, technologies should be used in a way that facilitates efficient communication. First, communication media need to be carefully chosen. For example, communication media with features such as presence awareness, real-time exchange of messages, like instant messaging, results in higher response rate than telephone calls [21] and can be used to initiate a communication process. In addition, managers should control the variety of communication tools they use to reduce information complexity.
In addition, as small business managers need to frequently re-evaluate the basis of decisions they made, the DSS models should be designed to be easily understood and used by the managers. The models should also be easy to modify so the managers have less workload in revising decisions.

Discussion

The four types of problems identified in the case studies are interrelated. For example, information ambiguity may be attributed to information withholding or distortion due to lack of trust. The types should not be viewed as existing independently. Traditional DSS technologies fail to address these problems effectively. The communication based GDSS are more oriented towards groups who work for one organization and do not address the social aspects of communication processes such as trust or shared understanding. Actually social processes in decision-making groups are considered detrimental to the quality of decisions. It is often assumed that removing social influence of the group on its members improves group decisions. GDSSs have been increasingly used to remedy the social faults of the decision-making process in groups. In these systems, anonymity is seen as tool to reduce the impact of the group over its members, and therefore as the key to improved group performance. A recent meta-analytic review examines the assumption that anonymity in GDSSs is beneficial for group decision-making on a range of performance indicators. It was found that the effects of anonymity on group performance are mixed and that performance in decision-making groups partly depends on the social context and relevant social norms. Therefore, to support communication-based inter-organizational decision making in small businesses, GDSS design must facilitate the inter-organizational social communication process and address the special problems in the process.

The contribution of paper is in identifying an important area where researchers can provide wisdom and guidance to the practitioners. Moreover, some preliminary technological solutions are proposed and may inspire the small business practitioners to use technologies to better support their inter-organizational decision making process. As the first study in this field, this paper serves as a starting point for future research. However, this paper is not without its limitations. This paper only studies the support of the inter-organizational decision making from a technological viewpoint. The author recognizes that technology alone cannot effectively solve the problems. Organizational and managerial factors must be studied in light of how they can significantly improve the process and be combined with the use of technologies. In addition, this study uses a single case study. A major concern about this case study is about its generalizability. Generalizability may be impacted by the subjective lens through which the researchers collect and interpret case study results as well as the small number of research sites. The findings of this study should be tested in more varied types of organizations. In addition, in a future study, quantitative methods, such as questionnaire survey, should be used to get data from a large number of small businesses and rigorous statistical analysis should be conducted to triangulate with the results from the case study. Such “in-between” research methodology will yield more confident inference and results.

References

Available upon request