**Developing Trust and Relationships in the Supply Chain using Social Media**

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**Abstract**

There are millions of users of Twitter, Facebook, Linked-in and other social media. Because of that access to large number of users, marketing has made extensive use of social media to get closer to the customer. Unfortunately, the supply chain has made only limited use of social media. However, social media can play an important role in the supply chain, gathering information and knowledge from disparate sources, and increasing available information, visibility of that information and velocity of that information in the supply chain. Those resulting changes in information characteristics can facilitate “sharing” information, knowledge and plans. As a result, social media in the supply chain can enable greater development of supply chain relationships and trust.

**Essence of the Article**

Social media facilitates gathering information and knowledge from disparate sources, which in turn allows sharing of information, knowledge and plans, all of which facilitate development of supply chain relationships and greater trust.

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**Developing Trust and Relationships in the Supply Chain using Social Media**

Social media increasingly has become a part of the fabric of both computing and social interaction. Reportedly1, there currently are over 100 million Twitter users and over 750 million Facebook users. Further, over 1 billion Facebook users are expected by the end of 2012. With such a large base of users, those with a supply chain interest can begin to imagine an explosion of the use of social media in the supply chain.

Unfortunately, the supply chain and operations have lagged behind other functional areas, such as marketing, in their use of the social media 2,3. As a result, recently very different sets of questions have been asked about social media and the supply chain. On one hand, a Dilbert Cartoon4 asked if social media in the supply chain was something that “no one wants and no one needs?” which led Gonzalez5 to ask “Is social media in supply chain management a waste of time?” However, in contrast, Howells6 asked “Are you ready for the social supply chain?” suggesting integration of social media and the supply chain was on the immediate horizon.

An analysis of most investigations on the use of supply chain and social media finds that just about every discussion ends up analyzing how social media can be used to draw a company closer to their customers or how social media can be analyzed to provide insights into their customers. (As an example, BestBuy uses social media to help their customers as seen in exhibit 1.) Although that issue clearly is important, building relationships and trust in emerging and extended supply chains also is critical7. Accordingly, the concern of this paper is on the use of social media in the supply chain to accomplish those goals.

**Social Media**

**Social media typically refers to internet-based applications that allow for the development of user generated information and provide a forum for other users to interact with each other. Social media have allowed individuals and groups to begin to use the Internet for communication, collaboration and expression.** As a result, social media is as much a philosophy as it is a set of technologies and specific software applications.

Twitter, Facebook and Linked-in are among the best-known social media applications. These and other social media are based on a range of technologies, such as databases and user interfaces designed to facilitate computer-based interaction between networks of users. Further, t**ypically, social media is cloud-based and often referred to as Web 2.0. Social media continues to evolve with new applications appearing over time and existing applications continuing to evolve.**

**Real-Time Supply Chain Systems**

Recently, sophisticated supply chain systems have been proposed and generated, as supply chains move toward so-called “autonomic” supply chains, where increasingly, different aspects of the supply chain are automated7. Such systems ultimately plan to tease the human out of the supply chain as artificially intelligent computer-based agents are designed to perform many of the system’s functions. Unfortunately, the design of those systems has ignored pockets of available information and knowledge distributed in the supply chain.

**Why Social Media in the Supply Chain?**

Other than a large base of users, one might ask, “Why Use Social Media in the Supply Chain?” Classical economics provides us with at least one response. As noted by Hayek9 , “. . . knowledge (is) not given to anyone in its totality’. Instead ‘. . . the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bit of incomplete and frequently contradictory knowledge which all the separate individuals possess.” Information and knowledge are asymmetric and distributed along the supply chain and among many different actors and groups. Social media provides philosophy and a technology to capture and communicate that dispersed information and knowledge in a way that enables collaboration and cooperation between supply chain employees and trading partners.

**Effects of Social Media on Information and Knowledge Flows in the Supply Chain**

Distributed and asymmetric information and knowledge in the supply chain, captured using social media can have a number of direct effects.

**Amount of Information Flows**

Social media offers the opportunity to gather information from a broad range of users in the supply chain. Because information is gathered from a broad range of participants, information that not might normally be made available can be embedded in supply chain discussions. As a result, social media helps generate a greater amount of information.

**Visibility of Information Flows**

With social media, information becomes visible to anyone who has access to the application and discussions. Further, sources of information can be clearly enumerated. Posted information potentially provides clear trails of information sources and uses over time. Visibility through identification can build personalization into the information flows. Additionally, steps such as including a picture of the person, place or thing being discussed, further facilitates visibility.

**Direction of Information Flows**

Classic organization structures send information down from top to lower level managers. Similarly, in the supply chain, information and knowledge tend to flow in specific directions, e.g., orders from customers, logistic directions for shipments, etc. However, if social media is embedded in supply chain processes then information and knowledge flows in multiple directions. Initiating, replying and responding, result in feedback and provide multiple directions of flows of information, capturing information from various pockets in the supply chain.

**Depth of Information Flows**

 “Depth” of information comes from the availability of multiple views. A broad range of participants, potentially each with access to private information, can generate different perspectives on the same and on different issues. Assembling those views provides “depth” around that issue. Since social media facilitates gathering information and knowledge from multiple sources, social media helps generate greater “depth” of information through those multiple views.

**Velocity of Information Flows**

Since information is available to and gathered by participants throughout the supply chain, information is rapidly and broadly disseminated information and does not get “stuck.” Critical information can be forwarded to those who need or want the information, as it occurs. For example, logistic information can be routed to those coordinating logistics. Information is initiated; feedback is generated in response, etc. Accordingly, social media increases the velocity of information flows.

**Example**

Consider the case of a traffic accident. The amount of available information increases as drivers involved or drivers passing by can provide information to dispatchers and other drivers. Visibility is provided by information about both the location and identification of the driver. Information flows in multiple directions as the driver provides information to the dispatcher, other drivers and others in the supply chain. Depth of information is generated as multiple drivers from different vehicles or participants in different locations provide descriptions of their views of the effects of the accident. Finally, the velocity increases as multiple participants provide information that is fed back to all facilitating other insights into the potential impact of the accident.

**Impact of Social Media on “Sharing” in Supply Chains**

Each of these information characteristics (amount, visibility, direction, depth and velocity), together, bring increased opportunities for “uses and users” of information, in particular, “sharing” that information and knowledge to enable communication, collaboration and cooperation across supply chains. This is particularly critical, since ultimately, economic competition is not just one economic entity against another, but competition is supply chain against supply chain. Specifically, social media work in different ways to facilitate such interaction through such “sharing.”

**Sharing Information**

Social media can facilitate the sharing of information, e.g., logistics information, by members in the supply chain. For example, Twitter messages can be used to share information about traffic conditions, weather conditions, status of a shipment, location of a shipment, condition of a shipment, or any of a wide range of status information (Exhibit 2). Further, social media can be used to provide others in the supply chain with event information, such as future events that might influence traffic, status of a shipment, etc.

**Sharing Knowledge**

Social media can be used to gather potential solutions to problems facing firms in the supply chain. Best practice knowledge bases are not a new development10. However, using social media, information about best practices can be shared, at the time that they are needed, pushed out to users’ just-in-time and in-context (Exhibit 3).

**Sharing Plans**

Increasingly, firms are beginning to share plans and data. For example, Quinn11 noted that pharma companies are increasing their collaboration in the supply chain, but that the practice is “far from mature.” Those same firms are making a concerted effort to generate closer ties to those other firms in their supply chain. As these firms begin to share plans and data, another “layer” of interaction can be sharing less formal data and opinions using social media.

Social media can be used to explicitly share plans (Exhibit 4). For example, firms in the supply chain could post information regarding plans on Facebook or equivalent. Plan availability might be posted to Twitter while links to the plans are included in the Tweets. Such information could facilitate supply chain relationships by providing insight into facility capabilities, such as capacity or other complimentary or competing shipments.

**Sharing Activities: Crowd Sourcing**

Social media can be used to “crowd source.” In particular, by making dispersed information and knowledge available to others, collaboration can be enhanced to draw unique contributions from those across the supply chain. For example, problems encountered by the supply chain can draw solutions from those across the supply chain. Thus, logistic solutions may employ multiple participants, rather than a single solution, while Twitter messages can be sent out seeking other supply chain participants to help move goods through the supply chain (Exhibit 5).

**Sharing Decision Making**

Social media can facilitate collaborative decision making. Broadly available information and access to other decision makers can lead to collaborative decision making. Multiple decision makers can provide potential solutions to decision making problems, sharing potential solutions or parts of solutions. In the traffic accident example above, participants may provide information about alternative routes or carriers.

**Effects of Improved Information and Knowledge Flows on the Supply Chain**

The effects of social media on information and knowledge (I/K) flows and the ways that sharing can be done suggests that social media can help eliminate I/K asymmetries by making that I/K available throughout the supply chain. In addition, I/K can help build and maintain supply chain relationships and build trust among supply chain participants.

**Building Supply Chain Relationships**

In an interesting discussion about supply chain management, Gonzalez12 recalled that a CEO had indicated that *“*This business used to be about relationships … I knew the people at my customers by name, and they knew me too.  But now I’m just viewed as a supplier, just another company to include in the RFP process, and relationship is less important than being the lowest-cost provider*.*”

The low cost provider view is consistent with recent autonomic-like architectures for the supply chain discussed above7. However, social media can facilitate re-building personal relationships that may have been de-emphasized over the years. Visible and personal communications generated through social media can help build supply chain relationships through communication and collaboration. Further, sharing information, knowledge, plans etc. also help build those supply chain relationships, providing an umbilical cord of additional benefits and savings beyond simply the production of a product.

**Building Trust**

In recent discussion of supply chains13, it was noted that in spite of the existence of a range of technologies, including electronic data interchange and comprehensive databases, the members of the supply chain “… engage in continuous, near daily, communication.” They further note (p. 49) that “… efficient management … requires a high degree of coordination and communication” and that supply chain (p. 64) “… relationships (require) … high levels of trust and close communication.”

Frequent and visible sharing of information and knowledge helps build trust. Further, information and knowledge visibility, such as including pictures15, also can improve trust. Accordingly, social media provides a medium to build that trust and close communication.

Recent studies about the use of social media, e.g., eMarketer14 provide additional insights into the generation of trust using social media and its potential application in the supply chain. Posts by “friends” on Facebook generally are seen as trustworthy. Similarly, blogs by people that are known also are seen as trustworthy. Accordingly, social media can help build trust and ultimately supply trusted information and knowledge along the supply chain.

**Mine Social Media Data**

Finally, increasingly, “business intelligence” or “data mining approaches” are being used to analyze social media interchanges as data16. Social media-based supply chain data is no exception in that it also provides another data source to be investigated. There are at least two reasons for the mining of supply chain social media exchanges. First, increases in the amount, depth and visibility of information potentially can lead to information overload. Computer-based data mining can mitigate that overload, by shifting the processing to digital resources. Second, computer-based analysis of the content of the data can help provide additional insights into the social media exchanges. In particular, the messages can be analyzed for their content about a range of many issues, of which we drill down on just a few.

**Demand Information**

One of the key concerns of the supply chain is to anticipate customer demand. Infosys17 suggested using the percentage of “likes” and “dislikes” from social media exchanges as a measure of interest of customers in a product, thus providing some potential insight into customer demand. Mining of likes and dislikes can also be extended to other settings beyond customers to include logistic or other operational activities where like and dislike data is available.

**Supplier Choice**

Hanfield18 reported an interesting application of social media data, whereby a manager wondering about the long-run viability of a company investigated whether employees had posted their resumes on line via their Linked-in accounts. If a large number of managers posted their resumes at the same time that could indicate that some critical events had occurred at the company that might threaten its long-run viability. Accordingly, data mining of media such as Linked-In can provide important data to help infer information about whether a company will continue in business.

**Logistics**

Consistent use of social media in the supply chain can help support logistics. For example, information gathered over time about particular highways can help develop a better understanding of likely highway conditions. Effectively, “intuition” can be generated about routes and the likelihood of problems being encountered when moving goods over those routes.

**Summary**

Unfortunately, there is limited research associated with how social media has been and can be used in the supply chain19. This lack of research and applications likely led Davis20 to ask can “social media improve the supply chain?” This paper has suggested that using social media results in changes in information flow and changes in how and who uses that information to provide critical benefits to supply chains, ultimately facilitating the building of supply chain relationships and trust.

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Exhibit 1 – Twelpforce at Best Buy



Exhibit 2 - ADS Logistics – Information on Traffic



Exhibit 3 – Sharing of Best Practices Information



Exhibit 4 – Make Planning Information Available and Visible



Exhibit 5 – Crowd Sourcing

