

THE INFLUENCE OF THE BUYER-SELLER RELATIONSHIP ON E-COMMERCE PRESSURES: THE CASE OF THE PRIMARY METAL INDUSTRY

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ABSTRACT

Existing data warrants research into the influence that large buyers have on the e-commerce adoption of smaller sellers. Based on a multiple case study of 12 organizations, the researchers discovered that the different stages of the buyer-seller relationship require the use of specific e-commerce activities. As the relationships evolve, so does the use of e-commerce. This phenomenon adds to the underlying complexity of SME e-commerce adoption and contributes to understanding their lower rate of adoption. Interestingly, e-commerce collaboration was absent from the relationships studied.

Categories and Subject Descriptors

K.4.4 [Computers and Society]: Electronic Commerce - *Electronic data interchange (EDI)*. K.4.3 [Computers and Society]: Organizational Impacts - *Computer-supported collaborative work, Reengineering*. K.6.1 [Management of Computing and Information Systems]: Project and People Management - *Life cycle*.

General Terms

Management, Human Factors

Keywords

SME, e-commerce adoption, buyer-seller relationship

1. INTRODUCTION

Smaller firms are making great strides in adopting e-commerce by placing it at the center of their technological and corporate business plans [17, 13]. Nevertheless, small firms' progress in this regard still remains limited compared to that of their larger business partners [26, 40, 49, 1, 59]. This mismatched

adoption rate between larger and smaller trading partners creates tension in their relationships, as the larger buyer will tend to exert pressure on the small or medium enterprise (SME) seller to adopt more e-commerce practices. It has already been recognized that large buyers have the power to influence their suppliers to adopt Interorganizational Systems [10, 36, 32]. Whether the power is seen as coercive ("by means of threats") or non-coercive ("by means of promises") [4], the end result is that the SME must follow the norm stipulated by the influential buyer because SMEs are very dependent on large customers' processes [49]. This influence on SME e-commerce adoption is also evident in other studies that indicate that factors external to the firm provide much of the explanation for e-commerce adoption by SMEs [13], that external pressure is a significant determinant in their technology adoption initiatives [26], and that their initiatives focus particularly on specific trading partners [7]. Unfortunately, there is still a lack of research in "industry pressures driving SMEs to the Internet" [17, p.80], since most studies depict "how" SMEs adopt rather than "why." The answer to this question remains vague. The existing data therefore warrants further research into the influence that large buyers have on the e-commerce adoption of smaller sellers. Our study departs from previous studies by revealing the origins of these pressures on SMEs' e-commerce adoption.

The purpose of this paper is to contribute to an understanding of the role of buyer-seller relationships when e-commerce pressures are present. The "e-commerce pressures" are defined as the e-commerce activities that a buyer imposes onto its seller in order to facilitate their interactions together. The buyer's desired outcome of the e-commerce pressures is the adoption of the specific e-commerce activities by the seller. The research question arose during a case study which was exploratory in nature and grounded in its approach. The goal of the study aimed at understanding what underlying logic guided seemingly disparate e-commerce pressures. It is in line with previous observations that indicate that more research is necessary into the link between technology adoption and the nature of the buyer-seller relationship [6, 45]. The paper also contributes to the literature in the field of e-business, because a research agenda drawn up by Drew [16] indicates that SME adoption of e-commerce represents a significant issue in e-business research that has not yet been fully investigated. Additionally, it seems that published qualitative models of such adoption are limited in number [48].

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The article is structured as follows. The next section presents the research background in order to provide an overview of the current knowledge on the link between buyer-seller relationships and e-commerce. Then follows the methodological approach that was used in the study. The research findings present some brief observations from the field. Finally, the paper concludes with a discussion of the findings and their implications.

2. RESEARCH BACKGROUND

Research on the adoption of various types of Interorganizational Systems (IOS) such as Electronic Document Interchange (EDI) or e-marketplaces for conducting e-commerce transactions has become a central point of interest in the academic literature [53, 8, 41]. Many previous studies point to the fact that a single form of IOS cannot fit all business situations. For example, Skjøtt-Larsen et al. [56] differentiate various characteristics of the buyer-supplier relationship to understand the influence they have on the use of a particular e-marketplace. Carr and Smeltzer [6] found a link between the use of different IOSs and buyer-supplier relationships. In a purchasing context, Hartmann et al. [30] propose the concept of fit between the purchase situation and the IOS in order to optimize the value created by the buyer-supplier relationship. Other authors (e.g., [41]) take the goal of the relationship into account to explain the adoption of transactional or cooperative IOS and advance that the former has different benefits and adoption considerations than the latter. The goal of the relationship is an important characteristic of the relationship [43, 42] and is defined in terms of (i) profit motives, where each partner strives for benefits; and (ii) cost reductions for the product and its associated transactions. Previous research therefore highlights the relevance of the buyer-seller relationship perspective in understanding the adoption and use of IOS.

The literature on purchasing and relationship portfolios provides an interesting analysis tool for better understanding the influence of buyer-seller relationships on e-commerce pressures. Since the 1980s, the concept of portfolio management in buyer-seller relationships (e.g., [34, 23, 55]) has been used for understanding business markets; categorizing customer, supplier and indirect relationships in which a firm is involved [62]; and providing direction in order to determine strategy [35, 46, 12, 3]. For example, Bensaou [3] suggests assessing the relationship based on buyer-supplier specific investment portfolios. This implies that specific investments in proprietary IOSs can influence buyer-seller relationships. Other authors propose various models to provide input to management decision-making by suggesting portfolios characterized by dimensions such as buyer-supplier power-dependence [24] or price and transaction cost [58]. Finally, an interesting approach is also proposed by Dabholkar and Neeley [12], who suggest looking at the goal of the relationship and the balance of power from a temporal perspective. They suggest that the buyer can view the relationship from a short-term perspective focused on a single or a few limited transactions, or from a long-term perspective focused on repeated transactions. Grönroos [28] defines relationship marketing as establishing, maintaining and enhancing the relationship with customers by mutual exchange and fulfillment of promises. This relationship can be divided into two parts, such as attracting the customer (buyer) and then building a relationship. Various classifications of the evolution possibilities of the buyer-supplier

relationship are proposed and used in the academic literature: (i) transactional to relational [2, 28]; (ii) opportunistic to collaborative [11]; (iii) arm's-length to partnership [51, 19]; (iv) exit to voice [31], etc. While the names differ, the general concept can be incorporated into portfolio analysis.

Although portfolio models present some limitations in relationship analysis [18, 37] because the variables they include are often subjective and difficult to measure, they nonetheless provided an interesting mechanism for understanding an e-commerce context. For example, Kraljic's [34] purchasing portfolio model was taken as a point of departure by Santema [52] to determine the type of IOS best suited for purchasing various types of products. Sawhney and Kaplan [53] have also used a portfolio model to build a taxonomy of e-marketplaces.

3. METHODOLOGY

The primary metal industry was chosen as the focus of the field study since recent developments have transformed the industry and the manner in which e-commerce is used. Observations confirmed that influential buyers were exerting pressure on their SME suppliers to adopt e-commerce.

The multiple case study is based on empirical evidence from 12 organizations: the two largest metal-producing companies in their industry (Buyer 1 and Buyer 2), eight of Buyer 1's SME suppliers (Suppliers A through H), one industry e-marketplace used by Buyer 1 (E-Marketplace 1) and a general Business-to-Business (B2B) e-marketplace (E-Marketplace 2) used by both buyers. The research started with an extensive review of industry reports and technological trends. The study was strongly grounded in empirical data through on-site factory visits and multiple executive interviews. The research was not conducted in a linear manner. Many iterations were necessary as the researchers would return on site for clarification and additional discovery until saturation was reached [25]. The resulting findings emerged from the collected data as is the case with grounded work [25].

The unit of analysis in this study is e-commerce pressures which are the e-commerce activities that a buyer imposes on a seller that wants to conduct business with the buyer. The semi-structured interviews were guided by a previously validated list of electronic business processes performed in the manufacturing sector [38]. When studying Buyer 1's e-commerce pressures, the researchers restricted their analysis exclusively to the business unit within the firm that deals in the primary metal industry. The same was done when studying Buyer 2. It was deemed important to isolate the influence of other industries because industry factors seem to influence the use of e-commerce by SMEs in many ways. They also play an important role in determining the e-commerce technology used [7, 22, 17, 15] and the degree of e-commerce integration the SME will have [14].

The next section covers the findings of our study, which serve as the groundwork for the results and discussion to follow.

4. RESEARCH FINDINGS

From the field study, it became apparent that the e-commerce pressures exerted on the sellers needed to be measured in two ways. Sellers indicated that the buyers specify their e-commerce requirements through business process compliance as well as through the adoption of specific technologies. For example, Buyer 1 requires that its suppliers “invoice through EDI,” “submit a request for proposal through E-Marketplace 1,” “sell through “E-Marketplace 1,” etc. The seller has no opportunity to choose technologies, as they are determined by the buyer and integrated into its internal systems. Being able to perform a process through

has successfully met the e-commerce requirements before the buyer-seller relationship can begin or grow. Once the first relationship level is achieved, new e-commerce pressures come into play. The trend continues until a more stable form of buyer-seller relationship is reached, as shown in Figure 1.

The following paragraphs present the different e-commerce adoption stages that were found to be present in the field study. They are based on the buyers’ requirements and were then validated with the sellers’ understanding of them. This ensured that both perspectives were included in the study.

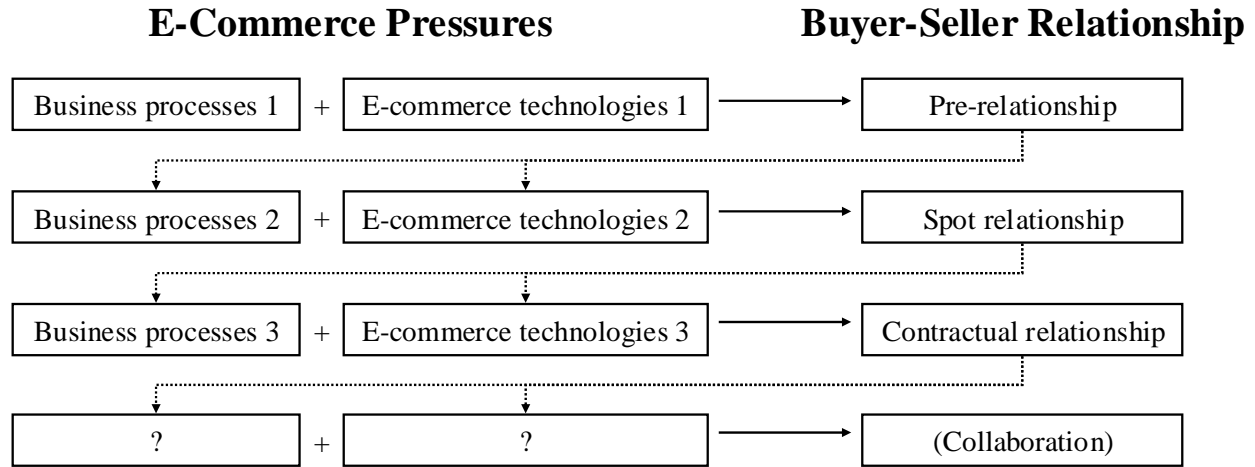


Figure 1. E-Commerce Pressures Evolution Path in the Primary Metal Industry.

another electronic medium is not sufficient to properly meet the e-commerce requirements (e.g., invoicing through e-mail when it is specified that this must be done through EDI). Conversely, being able to handle the technology without being able to perform the required processes also does not meet the buyers’ e-commerce requirements.

Our next finding was that Suppliers A through H faced different e-commerce pressures from Buyer 1. The sellers were being asked to implement different business processes and different technologies. Was Buyer 1 using a supplier classification in order to determine its e-commerce requirements? To find out, the researchers interviewed Buyer 1’s high-level managers who were directly responsible for the supplier e-commerce requirements. The same exercise was performed with Buyer 2 in order to gain analytic generalizability [61]. Both buyers presented their companies’ goal of cost reduction through e-procurement and explained that linking with their suppliers was an essential condition of that plan. For this to be achieved, their suppliers had to integrate the correct business process with the correct technology. In order to easily manage the disparate e-commerce competency levels of their suppliers, both buyers laid out a general path of e-commerce adoption for them. This path took the form of e-commerce adoption stages based on the buyer-seller relationship to be achieved. Each adoption stage has its unique e-commerce pressures that differ from those of the other stages. The buyers were essentially managing portfolios of their suppliers’ e-commerce competency levels. The different stages also serve as a test for the seller, to some extent, as it must demonstrate that it

4.1 Pre-Relationship

In a pre-relationship, the seller is neither recognized nor official. While no business relationship has been established with the buyers, the intent to establish one results in the seller’s compliance with requirements.

From the perspective of the buyer, the pre-relationship phase is an opportunity to contribute to cost reductions by evaluating new suppliers through pre-defined electronic tools. For example, Buyer 2 requires potential sellers to complete a Web-based form that it will then use to rank the different sellers using standardized data. This process also ensures a reduction in the search costs associated with finding a new supplier.

From the perspective of the seller, its objective is to advertise its products and services through the electronic media that the buyers will use. For example, a seller interested in starting a relationship with Buyer 1 could advertise on E-Marketplace 1.

4.2 Spot Relationship

In a spot relationship, no mid- to long-term contractual link has been established between a buyer and a seller. A typical situation would be to fulfill a sporadic need for a product or service involving either a substantial amount of money or a commodity product.

From the perspective of the buyer, the focus is on reducing the price paid for goods and services, while decreasing procurement cycle time and improving sourcing processes [5]. Using Internet

technologies to enable efficient communications and auction tools, electronic reverse auctions are widely encouraged and used in the primary metal industry. This is especially the case for standardized commodities [60] and also for low-complexity custom items in the supply market. Since price is the key performance measurement, it is no surprise that the relationship is adversarial [11]. In this situation, the development of deep relationships is not the goal nor is it desired [30]. This process enables the buyer to evaluate its current suppliers by testing them against new potential suppliers. This stimulates competition and forces the suppliers to innovate.

From the perspective of the seller, an important objective is to use the electronic reverse auctions as an opportunity to develop a first relationship with the buyer. While quality and service are increasingly regarded as “given,” the differentiation strategy mainly focuses on price, as suppliers see their margins squeezed [29]. Some suppliers will significantly lower their profit margins in the hope of winning the auction and thus making the relationship evolve. The acceptance of short-term burdens in the expectation of longer-term benefits, defined as a “futuristic orientation” [21], enables some suppliers who have successfully negotiated a spot relationship to progress to a contractual relationship.

4.3 Contractual Relationship

In a contractual relationship, a signed mid- to long-term contract is established between the buyer and the seller. In the primary metal industry, a typical situation would be a three- to five-year contract to fulfill a systematic need for a product or service involving substantial volumes, repetitive transactions, or a level of customization involving supplier discrimination. Recurrent purchases are made on the basis of the pre-negotiated contracts.

From the perspective of the buyer, the goal is to optimize the procurement process by automating repetitive transactions, thereby reducing transaction costs considerably. Driven by a long-term strategy, buyers develop a more formalized relationship which is at the same time, a less personal one [30].

From the perspective of the seller, the low margins of a contractual relationship are offset by the volume of business negotiated over the long term. However, moving from a spot to a contractual relationship entails investing in technologies, developing new competencies, reengineering existing business processes and adopting new ones. For example, Buyer 1 requires that its suppliers “sell through e-catalogues,” which implies that the supplier must digitalize its products, maintain an accurate database of its products and services, and eventually link its internal system to the specified e-marketplace where the catalogues are hosted.

4.4 Collaboration Relationship

One of the main reasons to enter into a collaboration relationship is to reduce costs [11]. Although many authors recognize this kind of relationship [39, 33], no collaborative relationships were found in our study between Buyer 1 and eight of its small suppliers. The level was nonetheless included in the model because Buyer 1 indicated that sellers could eventually reach a relationship that goes beyond a contractual relationship.

5. CONCLUSION

Different business relationships lead to the adoption of different types of IOS. In the primary metal industry, this has forced sellers to face new e-commerce pressures that redefine the relationships as they evolve. Influential buyers will engage in a relationship only with SME sellers that conform. The field study conducted showed that these e-commerce pressures are twofold: the seller must execute the correct business processes and adopt the correct e-commerce technology. Using this concept and understanding how it evolves through time should facilitate the sellers in predicting how their clients expect to be supported over time. This will allow them to better anticipate their clients’ future e-commerce requirements and therefore will better guide their own e-commerce adoption initiatives.

5.1 Evolutionary Nature of e-Commerce Pressures

Our findings indicate that the e-commerce pressures to which sellers must conform are based on the level of the buyer-seller relationship. When a seller successfully adjusts to the e-commerce pressures at the first level, its reward is achieving a new relationship level with the buyer. However, because the relationship evolves over time, so will the e-commerce pressures. Thus, the seller must cyclically adapt its e-commerce adoption path, which also serves as a test used by the buyer to qualify its suppliers. This evolutionary adoption process involves more effort than the adoption of a single e-commerce process as it requires that the sellers often invest in new specific assets.

5.2 Complexity of SME e-Commerce Adoption

For a given product, a single supplier may be at different relationship stages with different buyers. This involves being confronted with the need to manage multiple business processes with multiple technological tools on multiple e-marketplaces. When the seller is an SME, it is likely to be greatly influenced by its larger trading partners and must adapt to them. Managing many e-commerce pressures from many buyers adds a level of complexity that the SME must handle. Being strongly pulled in many directions can cause an additional strain on the SME’s already limited resources of the SME. This may be one of the factors that contributes to their overall lower e-commerce adoption rate.

5.3 Absence of “Collaboration Relationships”

Several factors may explain why the collaboration stage was not found to be present in the field study. First, only eight sellers were interviewed. Although this sample is quite sufficient for the purpose of a qualitative study, it is perhaps too limited to encounter a collaboration relationship. A second explanation is provided by the nature of the sampling technique used. Since the purpose of the research was to study buyer-seller relationships where there was a power imbalance between the trading partners, the sellers studied were SMEs. Perhaps they were too small to hold strategic value for the buyers, whence the absence of the collaboration stage [35]. Thirdly, it is possible that this kind of relationship does not exist in the primary metal industry. Quayle [49] and Spekman et al. [57] have already noted a lack of effective adaptation from traditional adversarial relationships to

modern e-collaboration in the industrial field. The primary metal industry may not be an exception to those findings.

5.4 Further Research

Many authors have concluded that the industry an SME operates in influences its use of e-commerce. Great care was therefore taken to isolate our findings to the primary metal industry, which limits the generalization of these findings to other industries. This limitation opens the door to further studies.

Our study shows that e-commerce pressures influence the adoption of e-commerce by SMEs. This leads us to ask two important questions: how do these pressures affect the adoption path of SMEs? And how does this finding contribute to e-commerce adoption stage theory? Current academic literature on e-commerce evolution shows how e-commerce adoption evolves within the firm [44, 7], and more specifically within the SME [9, 26], whether it be through stage models [50, 48], just-by-chance [54], electronic business process adoption [38, 20], e-commerce integration level [14, 15, 47] or in a non-linear manner [22]. Our research reveals that, as the buyer-seller relationship evolves, so will the type of e-commerce pressures.

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