

A Supplier Portal in the Automotive Industry

Martina Gerst

The University of Edinburgh, Scotland

INTRODUCTION

The use of Internet technologies and particularly portal technologies facilitate the creation of networks of relationships within the supply chain that provide organizations with access to key strategic resources that could not have been otherwise obtained (Venkatraman, 2000). As a result, portals appear to play a significant role in the business-to-business (B2B) arena. Even before the advent of the Internet, the use of information technology (IT) has been claimed to lead to a tighter coupling between buyer and supplier organizations (Malone, Yates, & Benjamin, 1987), allowing business partners to integrate their various business processes and enabling the formation of vast networks of intra- and inter-organisational relationships (Venkatraman, 1991). Nevertheless, such claimed integration effects require interoperability between IT systems, which can not be achieved in the absence of common IT standards or at least common IT infrastructure.

This article focuses on the development and implementation of a standardised Internet technology project—a supplier portal—in the automotive industry. The aim of the study is to unveil the factors that have led the decision to adopt the standardised technology, and have shaped the development and implementation process. The case explores the standardisation process in its social context and identifies and discusses the factors that shape the development and implementation of the standards.

BACKGROUND

Inter-organisational systems (IOS), as they are adopted in the automotive industry, refer to the computer and telecommunications infrastructure developed, operated and/or used by two or more firms for the purpose of exchanging information that support a business application or process. These firms are suppliers and customers in the same value chain, or strategic partners or even competitors in the same or related market (Cunnigham & Tynan, 1993; Li & Williams, 1999, p. 2). Through IOS, the business partners arrange routine business transactions. Information is exchanged over communication networks using prearranged formats. In the past, IOS were delivered on proprietary communication links. Today, many IOS have moved to the Internet (Turban & Lee, 2000).

One of the most prominent types of contemporary IOS are portals (Turban, Lee, King, & Chung, 2000). A portal is

defined as a linked electronic platform with a single point of entry, independent of time and space that enables collaboration through access to multiple sources of information. One of the most common forms of portals are business portals that focus on business partners, for example, providing suppliers with information and/or access to the buyer's internal systems (Sadler, Ganci, Griffith, Hu, & Marhas, 2004). Often, such portals are initiated by large buyers to facilitate the interaction with their network of suppliers, for example, General Electric's Trading Process Network and Boeing's PART marketplace (Turban et al., 2000).

In the automotive industry, original equipment manufacturers (OEMs) adopt portal technology to link internal systems and applications with external systems of suppliers in order to increase effectiveness and efficiency of inner- and inter-organisational processes. Nevertheless, such industry links require interoperability between IT systems which cannot be achieved in the absence of common IT standards. In the broad sense, a standard can be defined as "a set of specifications to which all elements of product, processes, formats, or procedures under its jurisdiction must conform" (Tassey, 2000, p. 588). David and Steinmueller (1994) differentiate between four categories of standards: reference standards, minimum quality standards, technical interface design standards, and compatibility standards. Compatibility standards are addressed in relation with network information and communication technologies (ICTs). They enable data exchange between components within a particular system or between different inter-organisational information systems.

Generally, technical standards play a crucial role in shaping not only the future form of the technology (Williams, Graham, & Spinardi, 1993) but also nature and functioning of an organisation and the relationships between organisations (Tapscot, 1995). Some technologies are complex to configure and adapt for use in different contexts. Additionally, implementations are approached differently by developers and users. To reconcile their differences, intermediaries are needed who shape a basic technology provided by the suppliers and configure different technological components from a variety of suppliers to meet the users' needs. In this process, universal technical knowledge and local knowledge of the organisational and cultural context of use are combined by all the actors, such as intermediaries, IT developers, and end users within adopting organisations.

Economic research on standardisation assumes that the actors involved in the standard setting process are seeking

only economic benefits. According to Schmidt and Werle (1998), the economic studies concentrate on the choices being made by actors only on the basis of their payoffs, where these payoffs represent economic returns (Besen & Farrell, 1994). The social processes underlying these choices, such as the balance of power and the level of trust, and the influence of the wider institutional context, which explain why such committees are organised, how actors are enrolled and the range of factors that shape their technological choices are not included in the economic model. To address these shortcomings of the economic approach, standardisation researchers have drawn from theories born in sociology, in particular institutional theory and social shaping of technology (SST). SST has been developed during the 1980s as a new approach to study the development of technology, and in particular information technology. The SST perspective arises from a shift in social and economic research on technology that explores and analyses both the content of technologies and the processes of innovation (Gerst & Bunduchi, 2004; Bijker & Law, 1992; Williams & Edge, 1996). It has emerged through a critique of the dominant rhetoric of technological determinism which portrayed technology as a vehicle for achieving organisational change, without taking into consideration the difficulties in implementing technologies, as well as their frequent failures to deliver predicted and desired outcomes.

Though often portrayed as a narrow technical matter, standard setting is a complex social process, shaped by an array of factors and representing embodiments of social relationships between the actors. The locales in which standardisation (standards development and implementation) take place are populated by different kinds of actors—differing widely in their expertise, context, commitments, and perceived interests include: software providers, business consultants, technical experts, market intermediaries, and their suppliers. Often the same actors or actors from the same industry/sector are involved in competing standard setting processes; for example, suppliers often have to accommodate different customers with different standard requirements.

A number of researchers have applied the SST perspective to reveal the factors that have shaped EDI development and implementation. For example, Graham, Spinardi, Williams, and Webster (1995) found that the formation of social networks is crucial in shaping the EDI process as they allow the collective benefits of the users involved to be understood and the necessary resources to be coordinated between the participants. With the arrival of Internet technologies and XML standards, research in this area has focused on the mixed sociotechnical nature of XML standard development process (Egyedi, 2001) and on the socioeconomic factors that shape the development of XML standards, in particular industry sectors such as the IT industry (Graham, Pollock, Smart, & Williams, 2003).

In the next section, the development and implementation of supplier portals in the automotive industry are discussed as part of a case study. The empirical research follows a single case study research design based on qualitative research. Data are collected through a questionnaire sent to the portal users, direct observation, and extensive secondary data research. A mixture of quantitative and qualitative methods (Miles & Huberman, 1994) is used to analyse the data.

PORTALS IN THE AUTOMOTIVE INDUSTRY

Driven by challenges such as shorter product life cycles, increasing cost pressure in stagnant markets, and higher complexity of the electronics embedded in modules and systems, OEMs will gradually increase the outsourcing of manufacturing within the next 10 years (McKinsey, 2003). The supplier community is characterised by small and medium-sized enterprises (SMEs) and is also undergoing strong shifts as the result of these pressures. Increasingly, platforms and model varieties require advanced deals and project management capabilities which means that in terms of innovation management, suppliers have to be able to provide leading-edge technology and efficient simultaneous engineering processes. This change affects primarily the tier-1 suppliers who are taking over systems integration responsibility and management of the supply chain from the OEMs.

Each OEM has an extensive network of suppliers and they, in turn, frequently supply more than one OEM. In this situation, bilateral standardisation of the complex processes and technology to enable the cooperation between OEMs and suppliers and between different suppliers is less than effective.

The pressure for collaboration enforced integration that shifted the emphasis from “stand-alone” initiatives to integrated solutions. Examples include electronic collaboration projects, the integration of engineering processes, and electronic catalogue projects to present product and service data. Such Internet-based applications are adopted not only to achieve operational effectiveness by reducing coordination costs and transaction risks (Koch & Gerst, 2003), but also to improve communication and information presentation. These projects had reduced costs and shortened throughput times to some extent, but the companies aimed at an all-out effort to press forward inter-organisational collaboration with suppliers on a global basis. The vision was that such collaboration should include the integration of individual projects in the business units as well as the integration of company-specific applications into one global supplier portal with one single point of entry (Gerst & Bunduchi, 2004).

3 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/supplier-portal-automotive-industry/17998

Related Content

E-Business Standards Setting

Kai Jakobs (2007). *Encyclopedia of Portal Technologies and Applications* (pp. 270-274).
www.irma-international.org/chapter/business-standards-setting/17881

Online Shopping in the United Arab Emirates: User Web Experience

Salam Abdallahand Bushra Jaleel (2014). *International Journal of Web Portals* (pp. 1-20).
www.irma-international.org/article/online-shopping-in-the-united-arab-emirates/110884

Hosting Portals on an E-Marketplace

Karyn Welshand Kim Hassall (2007). *Encyclopedia of Portal Technologies and Applications* (pp. 442-448).
www.irma-international.org/chapter/hosting-portals-marketplace/17910

Virtual Community Based Destination Marketing with YouTube: Investigation of a Typology

Arunasalam Sambhanthan, Samantha Thelijjagoda, Alice Goodand Ada Scupola (2016). *International Journal of Web Portals* (pp. 32-49).
www.irma-international.org/article/virtual-community-based-destination-marketing-with-youtube/179886

Servlets

Jana Polgar, Robert Mark Braumand Tony Polgar (2006). *Building and Managing Enterprise-Wide Portals* (pp. 82-93).
www.irma-international.org/chapter/servlets/5967