

The implementation of a supplier portal in the Automotive Industry – standardisation from a SME perspective

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Abstract: The implementation of supplier portals is one of the tactics adopted by car manufacturers (OEM) to integrate with their suppliers. The portals have a significant impact on the supplier community which is largely formed of small and medium sized enterprises (SMEs). This paper applies the social shaping of technology (SST) perspective to analyse the implementation of standardised portal technology in the automotive industry. The paper explores the interactions between the “technical” and the “social” aspects of technology from the SMEs perspective.

1 Introduction

The use of information communication technologies (ICT), particularly Inter-Organisational Systems (IOS), allows organisations to integrate their various business processes and enables the formation of networks of inter-organisational relationships [V91]. In the mainstream literature, IOS have been claimed to lead to a tighter coupling between buyer and supplier organisations [MYB87]. Nevertheless, such claimed integration effects require interoperability between information technology (IT) systems, which can not be achieved in the absence of common IT standards. Unlike Electronic Data Interchange (EDI), the dominant standard in the area of Business-to-Business (B2B) commerce during the 1980s and early 1990s, Internet based standards such as XML are claimed to be cheap, open and flexible. Therefore, the majority of IOS implementations nowadays concentrate around technologies that support XML related standards, for example the adoption of portal technology. However, these adoptions appear to ‘extend’ the organisation leading to networks of complex interaction between technology and the organisations. As a result, standards and the process of standardisation are no more a prominent issue only to technologists or economists, but also to researchers in social sciences [SW98]. This paper applies the SST perspective to explore the effects between the “technical” and the “social” aspects of technology on suppliers, with a specific focus on SMEs related to a portal implementation.

2 Theoretical background

Portals are a form of IOS that address collaboration and integration requirements. A “portal” or portal technology could be 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. Portals are adopted not only to achieve operational effectiveness by reducing co-ordination costs and transaction risks [KD96], but also to improve communication and information presentation. The pressure for collaboration enforces integration and shifts the emphasis from “stand-alone” initiatives to the development of standardised and integrated solutions [KG03] to networks. Consequently, portals can ‘extend’ single organisations leading to networks of complex interaction between technology and the organisations, characterised by various relationships that might have both driving and restraining effects on the individuals within it.

The implementations of these standardised and integrated solutions have effects at three different levels: (1) the organisational level of the companies involved, (2) the relationship between companies, for example, the way organisations involved do business, and (3) the industry level. In the economic area, there has been an array of studies analysing the failure of the “technology-push model”. The most striking one is the ‘IT Productivity paradox’¹ [F88], [Fo94], [P97]. Attempts of explanation span not only from economic and technical factors, but also lead to a more social oriented perspective where only a small amount of research has been done so far [W94].

SST has been developed during the 1980s as a new approach to study the development of technology, and in particular information technology (IT). SST maintains that technology develops as a result of a mutual shaping between technology and its environment (the organisation). At every stage during the development and use of a technology, a number of technical choices are available to the actors involved [WGS93]. The choices depend on a number of social, technical, economic, organisational and political factors. For example, the choice for a particular IT system can be based on the need to integrate legacy systems (technical factor), but it can also include the organisation’s non-technical particularities such as the reporting structure (organisational factor). Consequently, technology is seen as shaped by an array of socio-economic factors. With the arrival of Internet technologies and XML standards, research in this area has focused on the mixed socio-technical nature of the XML standard development process [E01] and on the socio-economic factors that shape the development of XML standards in particular industry sectors. SST aims to unveil the interactions between these factors, and the way in which they shape the technology and the outcomes of innovations [JPW98].

From the theoretical deliberations, it is assumed that: (A) the acceptance of a portal is determined by different factors, and (B) the changes caused by the portal implementation depend on the company size.

¹ The implementation of IT leads not necessarily to an increase of productivity, which was proclaimed by various researchers, soft- and hardware companies and consultancies.

3 Study

According to a study by McKinsey [M03], in the next ten years, the automotive industry will be shattered by a third “revolution” following the invention of the assembly-line production by Henry Ford and the lean production of Toyota. Customers expect “more car” for the same money, which means continuous cost pressure and innovation marathon for OEMs. In the future, this facts lead to a number of transformations that challenge the established relationships between industry players. For example, in order to improve customer satisfaction and increase revenue growth and shareholder value, large OEMs and their suppliers are forced to build large automotive networks where the added value is shifted from the OEMs to tier-1 suppliers (system integrators). 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 gradually increase the outsourcing of manufacturing, which is expected to rise from 25% up to 35% within the next ten years [M03].

The supplier community is also undergoing strong shifts as the result of these pressures. Increasingly, platforms and model varieties require project management capabilities and the management of innovations. Suppliers have to be able to provide leading-edge technology and efficient simultaneous engineering processes. These changes affect primarily the tier-1 suppliers who are taking over systems integration responsibility and management of the supply chain from the OEMs. As a result, the industry is forced to collaborate more closely, which requires standardisation of processes and data to ensure interoperability of systems. However, particularly for SMEs that shape to a large extent the automotive supplier community², standardisation is a crucial issue. An EU survey of SMEs (2003) reveals that more than 60% of SMEs agree that standards and standardisation are very important topics. Nonetheless, standards adoption remains a major headache for these SMEs³.

The study is part of a case study of a standardised portal implementation in one “Large Automotive Company” (LAC). Driven by the pressure for tighter collaboration, in 2002, LAC started to implement a supplier portal. Before the start of the project, based on different factors such as for example, a cost/benefit analysis, integration aspects, and strategy and people, the decision to implement and customise either off-the-shelf software or standardised technology was in favour of a standardised solution⁴. In LAC’s vision, the global supplier portal should integrate individual projects of different business units (BU) as well as integrate LAC-specific applications. The global, interdisciplinary project team consisted of LAC employees of different BUs, different solution providers, consultants and key suppliers. Main deliverables included the development of the user interface for the portal and the technical integration of the portal technology in the LAC IT infrastructure.

² In Germany, for example, according to Automobil Produktion 2003/2004, nearly 63% are SMEs.

³ According to a study of Nexolab in 2001, 75% of the suppliers see standardisation as a major obstacle for closer collaboration.

⁴ Industry-standard solution that uses XML standards to exchange data

For a large company, a portal implementation on a global basis is a million Euro investment. The goal of the survey was to find out if standardised portal technology is a suitable instrument to integrate inter-organisational processes between LAC and its suppliers, and to get a better understanding of the possible effects. It was assumed that the acceptance of the portal is determined by different factors such as functionality and services. Another assumption was that the changes on the supplier side caused by the portal implementation depend on the company size⁵. The survey was structured in three main parts. Each part contained structured and unstructured, optional and mandatory questions. In part A, general questions were asked, for example about the frequency of portal use. Part B contained questions related to portal functionality, for example the registration. In the third part C, the interviewees could evaluate the portal in terms of the information presented or the effects caused. After six weeks, more than 15% of the more than 8000 portal users replied to the online questionnaire.

# Employees	Comp. cluster	Comp. (%)	Portal user (%)	Admin (%)	1 App (%)
1-50	Small (S)	17	14	79	83
51-300	Medium (M)	35	30	64	70
301-1000	Large (L)	27	27	51	63
> 1000	Very large (XL)	21	29	48	61

Table1: Company cluster and examples of findings

Table 1 shows that 52% of the SMEs answered the survey (representing 44% of users). In small companies, nearly 80% of the answers came from administrators, in medium sized companies the figure slightly decreases to about 64%, whereas in large companies only around 51% of the answers came from administrators. At the point of time, 83% of the small and 70% of the medium sized companies worked with only one application integrated in the portal. The portals' average frequency use is two to three times a week for all company clusters (24%). In small companies, sales people (32%) mostly use the portal, followed by the "boss himself" (30%) whereas in medium sized and large companies, more than 52% of portal users are from the sales department. The registration process and the registration tool are key functionalities of a portal. On a 5-point Likert Scale anchored by 1 (not satisfied) to 5 (extremely satisfied), 45% and 40% of the SMEs were very satisfied with the tool (49%, 42% respectively with the process).

Asked about if the portal has changed their daily work, 34% of the SMEs responded yes (compared to 39% of large companies), 54% responded no (38% of large companies) and 12% did not know (compared to 22% of large companies). Small (14%) and medium companies (25%) mention organisational changes, whereas 30% of small companies experience process improvements, for example less tasks (compared to 19% of medium sized). Compared to the improvements, additional training efforts (18%, 27%) were mentioned, followed by organisational efforts (16%, 17%). In small companies the cost savings are equalised by the investment, 11% (in medium sized one's 3% savings versus 9% investment).

⁵ SMEs normally are characterised by limited resources in terms of IT capacity and man power.

4 Conclusion

The survey delivered interesting findings from a supplier perspective related to a portal implementation. The structure of the sample does not match exactly with the statistical figures of SMEs in the automotive industry. This is due to the fact that larger suppliers are more advanced in terms of IT and human resources, and in general, they participate sooner in OEMs projects. The positive effects experienced by the suppliers are particularly organisational changes, process improvements and cost savings. As negative effects, training and organisational efforts as well as investments were mentioned. Overall, it seems that SMEs are not in an inferior position compared to their larger competitors – as soon as they work with the portal, portal usage is the same as for large suppliers. However, because of limited resources in manpower and time, SMEs need for example more/or other training material. In terms of limitations of the study, it could be argued that the supplier perception would be the same if the portal technology was not standardised. At the same time, not all answers of the questionnaire were analysed so far. This will be done in a next phase, were also cross-references will be explored.

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