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B2B marketplaces sharing IS/IT infrastructures: an exploration of strategic technology alliances

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Abstract

Purpose – The purpose of this paper is to explore the development of a technology alliance for B2B marketplaces.

Design/methodology/approach – In this paper there was a lack of rigorous empirical evidence in the area upon which to base this study, so an exploratory methodology chosen was deemed appropriate. An interpretative case study was undertaken in the Eutilia B2B marketplace. Data gathering took place over a three-month period from July to September 2003. The data-gathering techniques used were semi-structured interviews and document analysis.

Findings – This paper draws upon research on co-operative partnerships and strategic alliances to explore the applicability of technology alliances to business-to-business (B2B) electronic marketplaces. The paper explains a model developed by Eutilia, a leading B2B marketplace in the utilities sector, to justify such a technology alliance. The case study illustrates how Eutilia operationalised this model and entered a technology alliance with a competing B2B marketplace. The analysis shows how both marketplaces benefited from the technology-alliance, and the paper concludes by proposing determinants of technology alliances for B2B electronic marketplaces.

Research limitations/implications – In this paper a single case study was the method adopted, so findings may not be generalisable.

Originality/value – This paper illustrates how B2B electronic marketplaces can benefit from technology alliances. This paper is of interest to both academics and practitioners involved in B2B electronic marketplaces.

Keywords Strategic alliances, Business-to-business marketing

Paper type Research paper

Introduction

Information technology has the power to create inter-relatedness among firms, markets, and products (Timmers, 1999; Rayport and Jaworski, 2001; Kondo, 2005). In this way it can alter the competitiveness of an industry and the nature of inter-firm rivalry (Porter and Millar, 1985; Porter, 2001). In some instances it can change the route to success within an industry from competition to collaboration (Rotemberg and Saloner, 1991; Askenas *et al.*, 1995; Polenske, 2004). An electronic marketplace is "an organisational intermediary that electronically provides value added communication, brokerage and integration services to buyers and sellers of direct and/or indirect products and/or services in specific horizontal or vertical markets by supporting basic market functions, meeting management needs for information and process support, and/or operating the required IS/IT infrastructure" (O'Reilly and Finnegan, 2005). Such marketplaces are an innovative form of interorganisational information system (IOS), utilising the internet and web technologies to provide shared infrastructure and a means for commercial exchange (Dai and Kauffman, 2002a). Evidence shows that the

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formation of electronic marketplaces has been declining and that failure rates are high (Klueber and Leser, 2000). Some of the key reasons for this include; delays associated with customer adoption (Senn, 2000; Wise and Morrison, 2000); the level of investment required (Angeles, 2001); and competition between marketplaces (Philips and Meeker, 2000; Klueber and Leser, 2000).

Dai and Kauffman (2002b) note that a B2B marketplace's IT infrastructure is a key element influencing its chances of success. To date, this infrastructure has been considered an important propriety asset. However, Carr (2003) argued that infrastructural technologies offer most value when shared among organisations rather that used in isolation. Shared IT infrastructures can be operationalised as Application Service Providers (Fantasia, 2000) and shared service centres (Cecil, 2000). However, such concepts have not been routinely applied to electronic marketplaces where a proprietary approach to technology infrastructures has been the norm.

This paper explores the development of a technology alliance for B2B marketplaces. The paper outlines a model developed and utilised by one marketplace, operating in the European utility sector, to justify pursuing a technology alliance strategy and becoming a service provider. Although this model is marketplace-specific, it illustrates the significant cost savings and efficiencies achievable through technology alliances. The paper concludes that mutual benefits and commitment can overcome the lack of a predisposition to co-operate amongst electronic marketplaces, and that the operational aspects of a technology alliance can potentially be straightforward.

Theoretical grounding and research objective

"A strategic alliance (is) when value chain activities between at least two companies with compatible goal structures are combined for sustaining and/or achieving significant competitive advantages" (Bronder and Pritzl, 1992). Such inter-organisational co-operative relations are formed for a number of reasons. First, in order for inter-organisational collaboration to occur, there must be willingness among participants to collaborate and second, these participants must believe that this collaboration will result in adaptive efficiency (Alter and Hage, 1993). Adaptive efficiency is "the ability to change rapidly and at the same time provide customised services or products, and at low cost" (Alter and Hage, 1993). Other reasons for engaging in inter-organisational co-operation include; resource procurement and allocation (Galaskiewicz, 1985; Clemons and Row, 1992; Alter and Hage, 1993), political advantages (Galaskiewicz, 1985), risk sharing and acquiring expertise (Alter and Hage, 1993), stability (Oliver, 1990), legitimacy (Galaskiewicz, 1985; Oliver, 1990) and efficiency (Oliver, 1990; Clemons and Row, 1992). Research has demonstrated that strategic alliances are established to minimise transactions costs (Pisano, 1989; Hennart, 1991), and that such alliances can lead to better financial positions for the organisations involved (Chan *et al.*, 1997).

In addition to the benefits of organisational co-operation, a number of costs can be identified. These are generally referred to as co-ordination costs and transaction risk. Co-ordination costs are the costs of co-ordinating activities among co-operating entities. Transaction risk is the possibility of opportunistic behaviour by one or more partners, which would reduce or eliminate the benefits of co-operating. Transaction risk is increased when an organisation makes an investment that has little or no value outside of the co-operative entity, or when an organisation looses control over an asset

as part of the co-operative agreement. Asymmetries in information leading to problems in monitoring the performance of partners also increases transaction risk (Clemons and Row, 1992).

In applying the strategic alliance concept to electronic marketplaces, Dai and Kauffman (2002a) propose four types of B2B alliances:

(1) *Marketing alliances*. These permit B2B e-market firms to promote and distribute their services. The alliance between ProNetLink.com (www.pronetlink.com) and the NetlinQ group for the marketing and promotion of ProNetLink.com in Holland is an example of a marketing alliance.

(2) *Participation alliances*. These support the creation of cooperative relationships by B2B e-market firms with other firms that buy and sell on their exchanges. DuPont use of the specialised e-market AssetTRADE to buy and sell equipment is an example of such an alliance.

(3) *Functionality alliances*. These allow B2B e-markets to cooperate with other firms to enhance the set of functionalities that they offer to facilitate online transactions. The strategic alliance between the marketplace bandwidth.com and Byers engineering company to offer the telecommunications industry a unique matchmaking service aimed at reducing the cost of constructing new fibre routes is an example of a functionality alliance.

(4) *Connection alliances*. This is where a B2B marketplace establishes linkages with partners so that partners' clients can have preferred access to the electronic marketplaces that the B2B firm is operating. An example of a connection alliance is the mutual agreement between Chemcross.com and CheMatch.com, two leading markets in the chemical industry, which will allow ChemCross access to CheMatch's global trading network and information resources.

Dai and Kauffman (2002b) illustrate their analysis by examining how different firms have benefited from alliances. However, they do not explicitly consider the issue of infrastructure alliances whereby marketplaces could share the underlying IS/IT infrastructure. Nevertheless, it is clear that the cost of developing the technological infrastructure is quite large for electronic marketplaces. The current business environment is forcing such markets to reduce overhead by driving down the cost of IS/IT expenditure. In this context, electronic marketplaces could consider the option of a strategic alliance to share the costs and benefits of owning and managing IS/IT infrastructures. However, such infrastructures have traditionally been regarded as an important element of a marketplace's competitive positioning. Consequently, the objective of this study is to explore the development of technology alliances for B2B electronic marketplaces.

Conceptual model

Researchers (e.g. Perrow, 1967; Woodward, 1965) have traditionally examined the influence of technology on organisational structure by investigating the effects of the technology. Such approaches were based upon a limited view of the process by which technology is designed and implemented (Roby and Sales, 1994). This view proposed that technology is inflexible and a given. The phenomenon of interest was therefore the impact of technology organisations. A more evolved perspective of the relationship between technology and organisations proposes that while technology influences

organisations, organisations at the same time, influence the design, implementation, and use (i.e. appropriation) of the technology to suit their requirements. The organisation-technology relationship therefore is more appropriately characterised as a mutually adaptive structuration relationship rather than the unidirectional relationship implied by early researchers (Poole and DeSanctis, 1990; Kumar and Van Dissel, 1996).

The work of Henderson (1990) was used to develop the conceptual model used to explore technological alliances in the context of B2B marketplaces. Henderson (1990) proposed six determinants of co-operative partnerships such as strategic alliance. These are broadly in line with the reasons for establishing organisational co-operation as identified above, in that they focus on mutual advantages. These determinants can be categorised along two dimensions; partnership in context and partnership in action. Partnership in context refers to the extent that those co-operating believe that the partnership will be sustained over time. Partnership in action refers to the degree to which those co-operating are able to effect policies and decisions regarding the operational performance of the partnership (Henderson, 1990). The partnership-in-context determinants are:

- *Mutual benefits*, such as financial returns, process or product innovations, risk sharing and the ability to create a positive working environment.
- *Commitment*. The three major indicators of commitments are shared goals, incentive systems, and contracts.
- *Predisposition*.

The indicators of an existing predisposition in favour of the partnership are trust and existing attitudes and assumptions. The partnership-in-action determinants are:

- shared knowledge among participants in the network;
- mutual dependency on distinctive competencies and resources such as market knowledge, management skills, product attributes, etc.; and
- organisational linkages, such as physical process integration, information integration, and social networks (Henderson, 1990).

Research method

Corbitt (2000) advocates the need for interpretative methods in studying IS issues, especially in inter-organisational electronic business environments. Case studies are regarded as the most commonly used qualitative research method in IS. "A case study examines a phenomenon in its natural setting, employing multiple methods of data collection to gather information from one or a few entities (people, groups, or organisations). The boundaries of the phenomenon are not clearly evident at the outset of the research and no experimental control or manipulation is used" (Benbasat *et al.*, 1987). Yin (1989) proposes that case studies are most appropriate when the research objective involves studying contemporary events, without the need to control variables or subject behaviour.

The single case study method is considered to be a potentially rich and valuable source of data, suited to exploring relationships between variables in their given context (Benbasat *et al.* 1987), and is appropriate where it represents a critical case (Yin, 1989). Eutilia was chosen an appropriate site for the study as it represents a

critical case in relation to improving the performance of a B2B market through a strategic technology alliance.

Galliers (1991) proposes that the strength of the case study is in its ability to investigate reality in far greater detail and analyse a larger number of variables than any other approach. However, the study is limited as the findings are not generalisable (Spencer and Dale, 1979; Lee, 1991) and the case approach also suffers from the lack of controllability, deductibility, and representability (Lee, 1991). Nevertheless, Lee (1991) suggests that the problems with case studies are neither endemic nor insurmountable. In addition, the flexibility and discoverability of the researcher is not as limited as with surveys (Trauth and O'Connor, 1991).

Remenyi (1998) argues that it is essential to use multiple sources of evidence when conducting a single case study as it helps ensure validity and reduce researcher and interviewee bias. The data gathering techniques used were semi-structured interviews and document analysis. Semi-structured interviews enhance the overall quality of the data gathered by allowing researchers to clarify questions and responses, and to explore new dimensions. Yin (1989) argues that documentation can be utilised to supplement and verify data from other sources. Furthermore, the use of multiple sources is considered to be a particularly strong tactic in ensuring the validity of research (Remenyi, 1998).

Data gathering took place over a three-month period from July to September 2003. The researchers began by reviewing all relevant documentation on the organisation before designing a case study protocol. Subsequently, interviews were conducted at Eutilia's headquarters in Leiden, the Netherlands. Members of staff in various roles within the organisation were interviewed. Those interviewed included the IS manager, commercial manager, auctions manager and numerous business and IT analysts. These people would be viewed as key members of staff within the organisation. Interviews were recorded and transcribed. Information was also obtained from secondary sources; newspapers and trade magazines. The accuracy of all data was verified through document exchange via email and conference calls.

Findings

This section examines the findings of the case study. First, the case background is explained. This is followed by an examination of how the marketplace operates. The need for a change in direction is examined, and the approach to developing a technology alliance is explored. The model used by the marketplace to examine the alliance decision is explained, and operationalisation of the decision made is outlined.

Background

Eutilia is a leading pan-European marketplace for the utility sector, offering source-to-pay services to buyers and suppliers. Headquartered in Leiden, the Netherlands, Eutilia is an independent market, with the financial backing of eleven of Europe's largest utility providers including Electrabel (Belgium), Electricite de France (France), Endesa (Spain), ENEL (Italy), Iberdrola (Spain), Nuon (The Netherlands) and RWE (Germany). At set-up, Eutilia received €63 million from the 11 founding members. These 11 members account for the vast majority of the annual European procurement spend in utilities.

Eutilia was created as a result of the European Commission's decision to liberalise the utilities market across Europe. At the time of its formation, Eutilia's CEO noted that "until now there has been a lot of protectionism throughout Europe, so there are a lot of inefficiencies in the utilities relationships with suppliers". Indeed the European Commission gave Eutilia the go-ahead to operate in an area governed by public procurement directives precisely because it was opening-up the utility market by supporting fair business practices and encouraging competition. In this context, the CEO argues that the advantage of using an electronic marketplace is "is not so much about price; it is more about having better processes and improved transparency".

Supporting procurement processes

Eutilia supports the procurement process through a range of on-line tools and services, and has introduced a sourcing optimisation service (SOS) for global utilities. SOS starts with the requirements of buyers being checked against Eutilia's database of suppliers. The SOS consists of four key components:

(1) Supplier scan.

(2) Pre-qualification.

(3) E-tendering.

(4) E-auctions.

The supplier scan service is an on-line and off-line search for potential suppliers by sourcing experts within Eutilia. The supplier scan is usually tailored to the specific needs of a customer. The service can be used to generate a long list of potential suppliers, or taken a step further to apply specific search criteria. In addition, the customer can also commercially pre-qualify potential suppliers using Eutilia's commercial assessment service (SCA). Eutilia's Chief Commercial Officer points out that pre-qualification is a complex multi-part process which can take many companies a number of years to complete. He stated "we do general pre-qualification; we examine the financials, health and safety record and environmental attitudes for example". He argues that there are big savings if buyers in different companies accept the same pre-qualification criteria.

Eutilia's Supplier Commercial Assessment (SCA) service is an important advance in making the assessment and selection for suppliers as easy and transparent as possible for utility industry buyers. SCA enables the identification of new suppliers by virtue of a shared centralised database of utility suppliers. All utilities using SCA are obliged to share their supplier data with other users. Therefore quality of data is assured through Eutilia's verification process. Data is validated annually to ensure the accuracy of supplier information. Eutilia believes that by using the SCA service, it can save up to 60 days out of the overall procurement process when compared with traditional competition.

Eutilia's e-tendering solution enables procurement professionals to electronically develop centrally stored tender documents, to manage distribution, to communicate simultaneously with all bidding suppliers, and to support an efficient evaluation of responses. Eutilia believe the advantages of this solution to include reduced sourcing cycle time; there is no paperwork as the e-tenders are on-line and can be easily stored for future use. E-tendering is also fully integrated with all other functions allowing a fully automated transfer to e-auctions.

Eutilia's e-auctions support the existing procurement process by enabling real time negotiation between suppliers and buyers via electronic web-based bidding. To date Eutilia has conducted hundred's of auctions. Options include utilising multiple variable bidding (MVB) which allows the buyers to precisely specify all the variables that they are seeking from the contract. Therefore, variables other than price may be specified.

As a result of customer demands, Eutilia launched their transaction services in November 2002. Based on contractual agreements between trading partners on the buy and supply sides, the Transaction Services enable the fulfilment of electronic transactions using pre-negotiated prices and service levels set by trading partners in private catalogues. Instead of needing multiple links to buyers and suppliers, each participant requires a single connection to the Eutilia marketplace. By adding products and or services to a shopping cart from the Eutilia marketplace catalogue or other supplier catalogues, the authorised buyer sets in motion a chain of events that results in automatic fulfilment and administration of the operational procurement process.

The need for change

It was evident by 2002 that Eutilia was not achieving its desired level of performance, and was unlikely to achieve its stated aim of being "cash positive" by mid 2004. The company recognised that the adoption of e-procurement by both buyers and sellers in the utilities sector was very sluggish, and forecasted rates of adoption were unlikely to be realised.

Resistance to change by utilities was a key issue impacting on Eutilia's performance. Many buyers and sellers had established business processes and were unwilling to change. In addition, there was unwillingness among many suppliers to utilise markets such as Eutilia as they saw them as being buyer-biased. Many believed that markets would impact upon the prices received for their products. Also, for both buyers and sellers there was still a question mark over whether the efficiencies to be gained by utilising the market merited the required investment.

Indeed, many of Eutilia's founding members had not utilised Eutilia for procurement purposes. Two reasons for this are evident. First, for such large organisations, the sums needed to take an initial stake were relatively small in comparison to the risk of being left out. Second, some of these organisations also created their own B2B markets which lead to non-utilisation or limited utilisation of Eutilia by these parties.

The ownership structure of Eutilia involved each of the founding organisations having a representative on the Board of Directors. The consensus among staff within Eutilia was that this resulted in a board that was too large. The board consisted of accountants, middle managers and procurement experts, nominated by the 11 founding members. Difficulties have resulted from the diverse backgrounds of those on the Board. In particular, getting consensus among these people proved difficult, and led to non-decision making. As a result, Eutilia lacked an agreed strategic focus and a long-term business plan.

Eutilia decided that there needed to be a change in the ownership structure. A small number of the founding members agreed to buy out the other members, leading to a reduction in the number of owners from 11 to six and a more streamlined governance structure. Many staff within Eutilia believe that this will lead to more efficient decision

making. Also, they believe that these five members will utilise the Eutilia marketplace for all of their procurement needs.

Technology alliance

By late 2002, management realised that they needed to consider other initiative in order to improve the performance of the marketplace. In early 2003 management decided to examine the cost and asset structures in order to establish how further revenues could be generated, and assets utilised to full potential. Management noted that Eutilia had spent large sums of money developing and implementing its technology infrastructure. Yet the return on this asset was not being maximised. In addition, a large amount of spare capacity existed as the uptake of e-procurement had not matched forecasted levels. Given the prevailing business environment, Eutilia needed to maximise its ROI from the technology investment and reduce costs. While examining ways to achieve these goals, they considered a technology alliance. The idea was that Eutilia would act as a service provider by making their technological infrastructure available to other markets. Eutilia began by outlining and analysing the factors which impact upon the cost structure of the market, and developed a model to explore the costs possible savings from entering a technology alliance with other markets. These factors included in this model are outlined in Table I.

There are two key elements underpinning Eutilia's technology alliance model; technology costs **(T)** and resource costs **(R)**. According to the model, the operational cost of a B2B electronic market **(Cm)** is composed of the sum of technology costs **(T)** and resource costs **(R)** in relation to building and operating the market:

$$\mathrm{Cm} = \mathbf{T} + \mathbf{R}$$

Eutilia subdivide technology costs (**T**) into two components namely hosting costs **(Th)** (e.g. servers, internet access and managed services) and software costs **(Ts)** (license investment and licence maintenance):

Elements	Definition
Technology costs (**T**)	Two elements: hardware and software Hardware incorporating hardware, hosting infrastructure and managed services (OS, DB and security) Software costs – licence investment and licence maintenance
Hosting technology costs (**Th**)	Marketplace infrastructure costs (servers, marketplace platform)
Software technology costs (**Ts**)	Software platform costs, e.g. commerce one, catalogue software, licence fees
Resource costs (**R**)	Incorporates two generic groups of resources, which can be found within a typical marketplace: Core resource staff (**Rc**) Technical resource staff (**Rt**)
Technical resource costs (**Rt**)	All technical staff employed in the marketplace (excluding 3rd party service provider staff)
Core resource staff (**Rc**)	Non technical staff who are core to the marketplace business model

Table I.
Elements which impact on Eutilia's cost structure

$$\mathbf{T = Th + Ts}$$

Resource costs **(R)** are also split into two components. Core resources (e.g. finance staff, IT support staff), which are a key component of every marketplace and specialist resources (market experts, component experts), which are specific to the particular industry sector in which the marketplace operates:

$$\mathbf{R = Rc + Rt}$$

Hosting costs (Th)

The model developed by Eutilia assumes a multi-server architecture over two locations. The current value for technology hosting costs **(Th)** is set at 720k. In line with the scenario that Eutilia found itself in it is assumed that one marketplace is utilising 30 percent of installed capacity, allowing room for at least two equivalently sized markets. Assuming that all parties would utilise the same marketplace platform, two partners would immediately achieve a dramatic savings in hosting costs by sharing the infrastructure. Further savings could be achieved by sharing the infrastructure utilised to support the applications, for example using one server to host both company's procurement tool. With this in mind they predict that a further 5-10 percent efficiency could be achieved. They estimate that any increase in participants beyond 2 is assumed to multiply (**Th**) by a factor defined in Table II.

Software costs

The model assumes that the shared marketplace would utilise the same software platform, for instance CommerceOne Marketsite. The value of technology software costs (**Ts)** assumed in this model is the yearly maintenance on the software. In Eutilia's case, the current value for **Ts** is 350k of which 50k can be attributed to applications. The model assumes that a qualified partner would need to own a marketplace license, for example a CommerceOne marketsite licence. The maintenance on this license would then be reduced according to whatever deal is negotiated with the licence vendor by the sharing marketplaces. Eutilia management believe that the cost of maintaining this licence could be significantly reduced by leveraging the collective bargaining power of the partners. Licenses such as the CommerceOne.net license enable multi-vertical communities. Eutilia estimate that total license maintenance per participant would be 200k, delivering a 33 percent efficiency compared to what a marketplace would pay in maintenance on its own.

Applications other than those provided by Eutilia would however require a separate license investment. Joining marketplaces would include their existing license portfolio for utilisation, and would help to reduce the probability of further application licences investment. Eutilia purport that this would be one of the major advantages over a typical ASP provider as, what they term, "multi-strategic roadmaps" may be supported

Participants (x)	1	2	3	4
Th factor (p)	1	1	1.4	1.6
Rt factor (k)	1	1.2	1.4	1.6

Table II.
Incremental factor

at very low cost if the assets are already procured. Further efficiencies could be achieved by sharing applications for products, which allow multi-enterprise usage and agreement of joint application roadmaps leading to the maintenance on excess applications being cancelled.

Resources

The model assumed that two generic groups of resources exist within a typical marketplace: core resources (**Rc**) and technical resources (**Rt**). Based on analysis conducted by Eutilia, a split of 70:30 is typical between **Rc** and **Rt**. Based on the situation at Eutilia, the model was designed with the following staffing levels in mind: thirty two core staff[1] and ten technical staff[2]. From a cost perspective resource costs for €4.4 million per annum are assumed, of which around 20 percent can be attributed to (**Rt**).

The method suggested by Eutilia to achieve efficiency is to separate core technical (**Rt**) from the business staff and to staff the infrastructure component with technical people. This technical group is intended to serve the requirements of all hosted parties, and be responsible for building, operating and maintaining the technology infrastructure. The resource group could be increased in proportion to reflect the number of participants in the marketplace by the factors shown in Table II. Core resource costs **(Rc)** would remain within the marketplace organisations and are therefore deemed to be constant. This is because these resources are unique for every marketplace business model. For example, electricity utility sourcing experts from a direct goods, vertical marketplace would not be shared with an indirect goods, horizontal marketplace.

With the incremental increase in costs as the number of participants increase (Table II), equations (b) and (c) are now represented as follows:

$$\mathbf{T} = (\mathbf{pTh}/\mathrm{x} + \mathbf{Ts}/\mathrm{x})$$

$$\mathbf{R} = (\mathrm{k}\mathbf{Rt}/\mathrm{x}) + \mathbf{Rc}$$

Illustrating the gains with sample figures

This model is proposed to highlight the efficiencies for B2B markets in pursuing technology alliances. It illustrates the efficiencies, which could be achieved from sharing an infrastructure and the associated technology resources. Sample figures used by Eutilia to explain the model are shown in Tables III, IV and V. These tables illustrate the efficiencies that could be achieved by sharing a platform and resources.

No participants	1	2	3	4
Th	720,000	540,000	528,000	504,000
Ts	350,000	250,000	250,000	250,000
T	1,070,000	790,000	778,000	754,000
Efficiency (%)		26	27	30

Table III.
Hosting costs

The efficiencies outlined in Eutilia's model are focussed upon reducing the cost of technical hosting, systems maintenance and technical resources. When concentrating on these values alone the efficiencies that can be achieved by sharing can amount to approximately 40 percent for two parties. Larger savings are evident as a greater number of marketplaces become involved as documented in Table VI.

Operationalising the model

The model developed by Eutilia illustrates that there are many efficiency gains to be achieved by marketplaces from entering technology alliances. The model illustrates that a technology alliance for B2B marketplaces would reduce hosting, software, and technical resource costs for all market participants. In addition, a technology alliance would be beneficial to Eutilia by enabling then to maximise their ROI on their technology infrastructure as they would benefit from revenues earned as the service provider. Managers at Eutilia consequently concluded that a technology alliance with other B2B markets would be advantageous.

The next step for Eutilia was to operationalise the "technology alliance" strategy. The first step was to find suitable partners. Eutilia's ownership structure proved useful in this regard. Two of the founding members, RWE (through its subsidiary Thames Water) and Ondeo (France) launched a new marketplace in the utilities sector; Aquadia. While Aquadia focuses specifically on the water industry, it operates in the same market segment as Eutilia. Indeed, Aquadia and Eutilia would be deemed to be competitors. Yet RWE and Ondeo agreed that there were efficiencies to be realised for

Table IV. Resource costs

No participants	1	2	3	4
Rt	1,000,000	600,000	466,667	400,000
Rc	3,400,000	3,400,000	3,400,000	3,400,000
R	4,400,000	4,000,000	3,866,667	3,800,000
Efficiency (%)		9	12	14

Table V. Total costs

No participants	1	2	3	4
T	1,070,000	790,000	778,000	754,000
R	4,400,000	4,000,000	3,866,667	3,800,000
Cm	5,470,000	4,790,000	4,644,667	4,554,000
Efficiency (%)		12	15	17

Table VI. Overall efficiency gains

No participants	1	2	3	4
Th (Marketplace)	360,000	180,000	168,000	144,000
Ts (Marketplace)	300,000	200,000	200,000	200,000
Rt	1,000,000	600,000	466,667	400,000
Total	1,660,000	980,000	834,667	744,000
Efficiency (%)		41	50	55

both markets through entering into a technology alliance. Under the terms of the alliance agreement, Eutilia provides the transactions platform, technology and expertise that underpin Aquadias business offering by providing the procurement solution and hosting the customer support centre. Aquadias transaction services, which are provided by Eutilia incorporate the following:

- A hosted buying and supplying solution: the procurement solution is web based and accessed via the internet.
- Catalogue management: the catalogue management tool is based on Poet's[3] eSupplierWeb. This solution enables the creation, maintenance and distribution of customised catalogues on a supplier self-service basis. It provides a browser-based interface for all catalogue management tasks.
- Electronic invoicing: an inherent part of the transaction services solution provided.
- Customer support: provided by Eutilias technical support staff.

The in-house architecture design and technical knowledge made the ASP hosting of an additional marketplace feasible. This enabled the implementation of an ASP marketplace customer with minimal technical contribution from a third party consultancy agency (Accenture).

In practice, Eutilia simply rebrands their applications with the Aquadia logo. Where Eutilia has established partnerships with technology providers such as CommerceOne and POET then the efficiencies in relation to licensing **(Ts)** outlined in the model have been realised, providing benefits for both organisations. Other efficiencies and costs savings documented in the model have been achieved. For example, both Eutilia and Aquadia utilise the same customer support personnel. Therefore the economies of scale that could be achieved in technical staff **(Rt)**, documented in the model were achieved. One of the key advantages of this alliance is that Aquadias customers benefit from the full range of transaction services that prior to this alliance would only have been available to Eutilia's customers. In real terms Aquadias customers are not even aware that the application is being designed and supplied by Eutilia. With regard to performance Eutilia have received substantial fees from Aquadia for service provision and managed services (service delivery, service support and application management).

The irony of Eutilia providing an infrastructure and platform to Aquadia, a key competitor is remarked on by a number of staff at Eutilia, who note that some commentators may view the alliance as "confusing". Yet the CEO of Eutilia argues that from a business perspective, the technology alliance "makes sense to make technology available to as many players as is possible. There is a lot of consolidation in marketplace capacity". Most importantly, from a return on investment perspective, the results cannot be questioned. Eutilia has noted a significant improvement in their financial position through increasing the return on the investment in their technology infrastructure, and through economies of scale that have helped to reduce operational costs.

Conclusions and implications for practice

Table VII presents an analysis of the partnership-in-context and partnership-in-action determinants of the technological alliance studied, using the work of Henderson (1990) as a lens. An analysis of the partnership-in-context determinants reveals the

Determinant	
Mutual benefits	Lower hardware, hosting, licensing and IT personnel costs for all participants in the alliance. Also, opportunity exists to share software products that allow multi-firm usage resulting in economies of scale
Commitment	Commitment enhanced by shared goals to increase return on investment in IS/IT infrastructure. Also shared maintenance contracts ensure ongoing commitment
Predisposition	Low predisposition to co-operate as technology is regarded as a proprietary asset. Low predisposition overcome by common shareholders' requirements to reduce costs
Shared knowledge	The use of a shared team of technology experts ensures sharing of knowledge of a technical nature amongst marketplaces
Mutual dependency	Mutual dependency created between provider of IT infrastructure and those that utilise it. Also, increase in the range of transaction services offered to customers due to ability to share costs of advanced IT infrastructure
Organisational linkages	Shared team of technical experts

Table VII.
Analysis of determinants of technology alliances for electronic marketplaces

importance of mutual benefits and commitment in overcoming the low levels of predisposition towards technology alliances traditionally associated with electronic marketplaces. The table also reveals that the partnership-in-action determinants are potentially straightforward with regard to operationalising a technology alliance for electronic marketplaces.

The limitations of the research strategy outlined earlier have implications for interpreting the research findings. Primarily, the findings are not generalisable as the case study findings are limited to the marketplace investigated. However, as there was a lack of rigorous empirical evidence in the area upon which to base this study, the exploratory methodology chosen was deemed appropriate, and the limitations are considered acceptable. Furthermore, the findings of the study have provided a valuable insight into electronic marketplace practice and can form the basis of further research. Thus, we believe that some tentative implications for practice can be drawn from our study.

Overall, we believe that B2B marketplaces could use technology alliances to improve efficiencies, reduce costs, and improve overall performance. Nevertheless, it is clear that moving away from traditional conceptualisations of an IT infrastructure as a proprietary asset will challenge those managing electronic marketplaces. This is likely to be a particular barrier to technological alliances where the IT infrastructure is seen as an integral part of the product/service offered to customers. In order to see beyond traditional barriers to technological alliances, practitioners may need to explore mutual benefits such as economies of scale, infrastructure enhancement, cost reduction etc. It would also be necessary to explore approaches to ensuring ongoing commitment to the alliance.

Notes

1. Sales, sourcing experts, finance, HR, operations, business analysts.
2. IS manager, project manager, operations engineer.
3. POET software is a software company that provides solutions for creating, managing and distribution of electronic catalogue data. POET software delivers catalogue technology for Eutilia's catalogue services.

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