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2005

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### Recommended Citation

Lockett, Nigel and Brown, David, "An Application Service Provider Perspective of eBusiness Engagement by SME Aggregations" (2005). *AMCIS 2005 Proceedings*. 439.

<http://aisel.aisnet.org/amcis2005/439>

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# An Application Service Provider Perspective of E-Business Engagement by SME Aggregations

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## ABSTRACT

Against a background of the low engagement of small to medium-sized enterprises (SMEs) in e-business this paper investigates the application service provider (ASP) perspective. Conducting qualitative case studies based of SMEs using hosted applications and service providers the research highlights the opportunity for 'one to many' service delivery to aggregations of SMEs promoted by trusted third parties and the emergence of information repositories.

## KEYWORDS

SMEs, ICT adoption, networks, intermediaries, aggregation.

## INTRODUCTION

The adoption of information and communication technology (ICT), particularly e-business, by small to medium-sized enterprises (SMEs) is acknowledged by governments and other agencies as an important factor in economic development and wealth creation (DTI 2004; OECD 2004). It is against the background of the low engagement by SMEs in e-business, and of a worsening 'digital divide' between large and small firms (OECD 2004:4), that this paper seeks to explore the application service provider (ASP) perspective. E-Business is widely defined as the use of inter-organisational electronic networks to transact, process and collaborate in business markets and hence it incorporates e-commerce. Within this definition there is a broad spectrum of applications from simple e-mail and web pages to the more complex applications of customer and supplier integration, which are collaborative in nature. It is the latter higher complexity applications that have the potential to provide major economic and competitive benefits yet in 2004 UK SMEs were typically four times less likely than larger firms to be engaged in these collaborative applications (DTI 2004). This digital divide, which is evident in the widely differing rates of e-business adoption, has crucial theoretical and policy implications. For theory our current understanding of ICT adoption by SMEs is largely characterised by the single firm as the unit of analysis and by a user perspective. Less well understood theoretically is the impact on adoption of other factors including the 'provider' perspective and the behaviour of SME aggregations such as supply chains.

The paper reports on some recent research on SMEs that were using high complexity e-business applications and explores the extent to which the research findings could address the core concern of low engagement discussed above. The SMEs investigated were atypical - they were part of an aggregation and were using business applications 'hosted' by an ASP. Following this introduction the paper is structured into three further parts. In part two the broad literature and theory relevant to the adoption of e-business is reviewed. From this literature an interpretive framework is constructed which informs both the data collection and the subsequent interpretation. Part three details the methodology and in particular the empirical design. Finally, part four presents the research findings and the interpretation of these in the specific context of ASPs.

## LITERATURE REVIEW

The reality of practice challenges our theoretical understanding of both the adoption by SMEs of e-business and the emergence of aggregations as a meaningful development within the context of adoption. Here aggregation is defined as any grouping of enterprises where there is evidence of inter-organisational relationships that go beyond simple transactions. These aggregations can range from local retail traders campaigning for improvements to their local infrastructure to the highly developed supplier-based networks of the aerospace industry. In terms of both informing the research design and the subsequent interpretation of the research data, three main strands of theory are relevant. The first are those theories relevant to our understanding of the adoption of ICT by SMEs, including technology transfer and technology diffusion. The second strand relates to the concept of aggregation and to the theory of inter-organisational networks as an organisational form. The

latter provides the wider context within which the third strand of theory dealing with the emergent e-business model literature is discussed. The review concludes with a distillation of key elements from these three literature strands as a basis for interpreting the data.

### **ICT adoption by SMEs**

The broad antecedents for a theoretical appreciation of ICT adoption by SMEs are studies of technology transfer and of the diffusion of innovations respectively. Technology transfer can be seen as largely purposeful and is characterised by planning and deliberate actions. In contrast innovation through diffusion is seen more as a natural process. In reality both mechanisms of technology transfer and diffusion are likely to coexist. This distinction, highlighted by Chakrabati and Rubenstein (1976) in their study of interorganisational technology transfer, is helpful since regional policy will need to delineate the areas of intervention for facilitating e-business engagement, whilst recognising that other mechanisms will be at play.

Although studies on the adoption of e-business by SMEs are relatively recent research antecedents are well established. Rogers' (1995) work on the diffusion of innovations, whilst initially neither ICT nor SME-focused, has evolved to incorporate diffusion networks and critical mass in order to appreciate the adoption of interactive innovations, such as the Internet (Rogers, 1995: 313). The early work of Rogers took a provider (or supplier) perspective and identified the characteristics of innovation, which would impact on its rate of diffusion including such factors as compatibility, complexity, observability, relative advantage and trialability. In particular Rogers highlights the important roles of change agents (intermediaries) in influencing innovation decisions. Within the specific domain of ICT adoption by SMEs recent studies utilising Rogers' model of innovation include Kendall et al. (2001) and Mehrtens et al. (2001). These two studies provide support for the applicability of the model when related to e-business engagement by SMEs. Many other authors have contributed to this domain and three themes of work can be identified, which although overlapping can usefully be separated, namely technological, strategic and organisational. All three strands can be interpreted within the long established technology-push and need-pull models of technology innovation adoption in IS (Zmud, 1984; Chau and Tam, 2000). These models typically identify 'push' factors such as Government initiatives or technological drivers, and 'pull' factors such as organisational crises or opportunities.

Many authors have tried to develop an understanding of ICT adoption by SMEs. Three strands of work can be identified, which although overlapping can usefully be separated, namely technological, strategic and organisational. The first literature theme, and arguably the most prolific, is the technological theme that views adoption as an outcome of a complex process of evaluation, frequently informal, by SMEs of multiple factors both external and internal. These factors are frequently cast as enablers or barriers to adoption (Lefebvre et al. 1991; Cragg and King 1993; Walczch et al. 2000; Mehrtens et al. 2001; Windrum and Berranger 2003). The second theme is that which emphasises the strategic logic in the decision to adopt ICT (Blili and Raymond 1993; Kowtha and Choon 2001). In this context SMEs can be both victims and beneficiaries depending on their degree of proactivity. Blili and Raymond (1993) showed that IS planning was increasingly critical for SMEs as technology became more central to their products and processes, and they concluded that IS planning needed to be integrated with business strategy. The notion of strategic information systems planning in SMEs is further developed in Levy and Powell (2000) and Levy et al. (2001). The third theme is that which takes an explicit organisational stance, and frequently that of the owner-manager and the social parameters within which the firm operates. As such the approach counters the strategic or technological emphasis of the first two strands (Blackburn and McClure 1998; Southern and Tilley 2000). An important observation of Southern and Tilley is that "when small firms use IT complex relations unfold. It is by no means a simple linear development whereby observers can expect an incremental build up of knowledge and expertise on ICT to be established within the firm" (Southern and Tilley, 1999: 152).

### **Inter-organisational networks and aggregation**

Since the medium and higher complexity e-business applications are essentially collaborative in nature the theoretical perspective of organisational networks is particularly relevant for explaining firm behaviour. Although 'networks' have always existed the recognition of networks as a distinct organisational form, amenable to analysis and theoretical development, is more recent (Granovetter 1985; Provan and Milwood 1995). As products have become increasingly modular and knowledge distributed across many organisations firms have recognised an increasing requirement to collaborate with other firms both formally and informally (Baldwin and Clark, 2000). Consequently, the locus of innovation and adoption is no longer the individual or the firm but increasingly the network in which a firm is embedded (Powell 1990; Ebers, 1997; Jarillo 1998). The importance of the strength of ties in the supplier network for productivity has also been demonstrated (Perez and Sanchez 2002), and the standards necessary for a technology to function across different markets depend increasingly on networks of firms (Munir 2002). For smaller firms the ability to gain access to new technologies is one of the

principle reasons for engagement in networks (Grandori and Soda 1995), and cross-industry networks have been shown to play an important role in the diffusion of complex technologies (Erickson and Jacoby 2003). All the preceding theoretical contributions, however, were developed outside of the specific context of e-business; nevertheless they provide many of the antecedents for the emerging concepts within e-business networks. Grandori and Soda (1995) differentiate networks by the extent to which the links between organisations are formalised and networks are termed bureaucratic, social or proprietary. In the context of SMEs Brown and Lockett's (2004) classification of aggregations draws particularly on Grandori and Soda (1995), and links the degree of structure (informal to formal) to the degree of integration (independent to integrated).

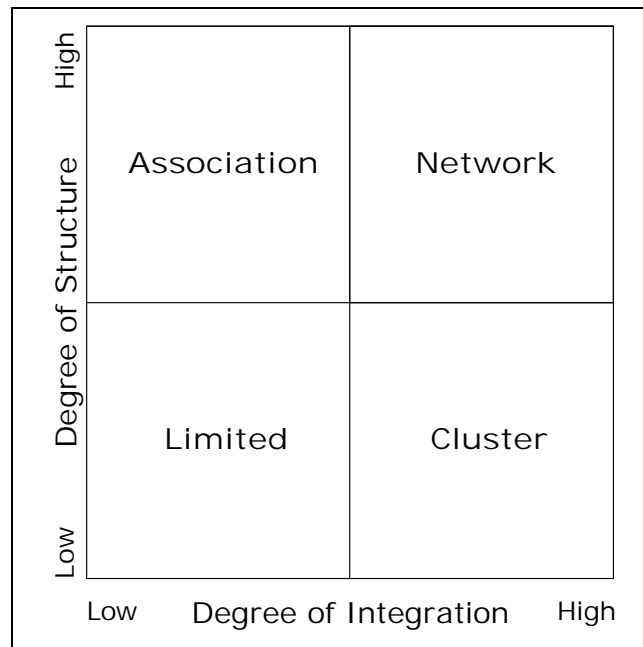
### **E-Business models**

The final strand of theory is the emergent e-business model literature, which includes insights into alternative business models and changing industry structures as a result of Internet-based technologies. A number of authors have offered broad conceptualisations of e-business models (Amit and Zott 2000; Timmers 2000; Hamel 2000; Weill and Vitale 2001; Currie 2004). Other authors have developed models specific to particular situations.

The need to encourage SME engagement in e-business has been readily acknowledged by industry and government but just how this was to be achieved, particularly with the more complex e-business application areas, remains unspecified. When examining the uptake of e-business amongst SMEs the theoretical concepts of collaborative networks, interdependence, power and trust provide important contributions. For example, whether owner-managers use adversarial or collaborative approaches to purchasing relationships may impact on their adoption of ICT (Cox and Hines, 1997). Similarly, the scope for intermediaries to play a crucial role in the support and provision of SME-orientated e-business applications has been noted and is central to this research (Currie 2002 and 2004; Smith and Kumar 2004). In the specific context of ASP models and SMEs several critical and reflective analyses have recently emerged (Kern et al. 2002; Susarla et al. 2003). The ASP model offers users access to applications in a hosted environment on a 'one to many' basis. The challenge for many ASPs is to replicate this 'one to many' delivery model with a commercially viable recruitment or marketing model.

### **Literature synthesis and an interpretive framework**

The purpose of this literature review has been to present previous contributions on the engagement of SMEs in e-business in a way that helps position this research both theoretically and practically. In terms of informing both the research design, especially the data set and its subsequent interpretation, three concepts are central to the research and are derived from the above literature. They are: (i) the types of aggregation that SMEs can be associated with (ii) the nature and role of the intermediaries, and (iii) the dimensions and characteristics of aggregation. Both individually, and in combination, these concepts are relevant to understanding SMEs' disposition to engage in e-business. For all three concepts the authors' models derived within the research programme have been utilised. In the case of concept (iii) – the dimensions and characteristics of aggregation – the model is a direct synthesis of the broader key literature reviewed previously. The three concepts, which comprise the overall interpretive frame, are described below.



**Figure 1. Taxonomy of aggregations for SMEs (Brown and Lockett 2004)**

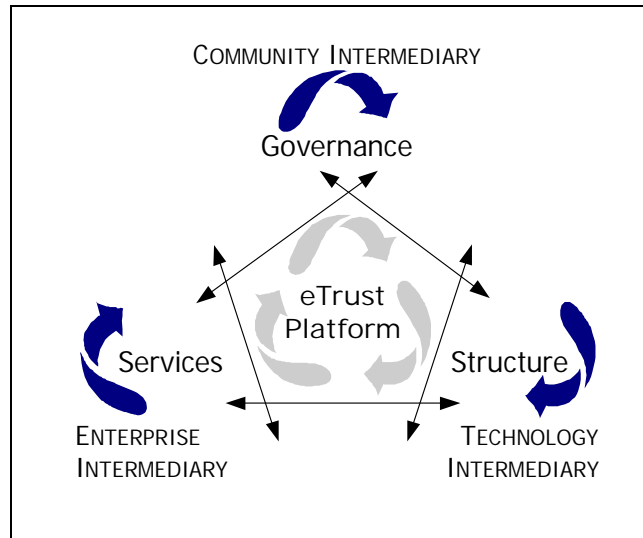
**(i) Types of aggregation**

Within the broad concept of aggregation the taxonomy in Figure 1 locates ‘networks’ as one form of strong or complex aggregation, which can be contrasted with other weaker, or simpler aggregation forms – a distinction which can be useful when considering the nature of an SME’s engagement in an aggregation and the role of any intermediaries. The taxonomy is suitable for both online and offline aggregations and comprises four types:

- Limited - any relationships are loose and participants are independent, characterised by little or no aggregation. Intermediaries
- Association - including trade associations, guilds, professional and registering bodies, where reputation is enhanced by membership and structure is high, but businesses remain largely independent.
- Cluster - forming part of an identifiable business market, business cluster or economic cluster where SMEs are increasingly dependent on complex linkages within a sector, but structure is low.
- Network - represents a more highly developed form of co-operation, which exhibits both relatively high structure and integration. In the literature these networks are often implicitly described from a large business perspective.

**(ii) Nature and role of intermediaries**

This is shown in Figure 2 and attempts to conceptualise the role of intermediaries in the digital economy. The model summarises the relationships between multiple SMEs and the intermediaries necessary for online aggregations of SMEs to function. There are three kinds of intermediary. The role of the technology intermediary is to provide the ICT platform on which services can be provided and could include hardware, security and communications. The role of the enterprise intermediary is to provide the services including applications software, hosting and consultancy. The technology and enterprise intermediaries can be considered as generic. In reality these functions could be provided by one or more organisations. The community intermediary, however, is specific to a particular aggregation. It has a critical role in gaining the commitment of potential participants to enter the e-aggregation and can be considered as a trusted third party. It is the community intermediary, providing a broad governance function, which is a distinguishing characteristic of the eTrust Platform conceptualisation. A trade association would be an example of a potential community intermediary.



**Figure 2. eTrust Platform (developed from Brown and Lockett 2001)**

***(iii) Dimensions and characteristics of aggregation***

The concept of ‘aggregations of SMEs’ as a promising institutional arrangement to facilitate e-business engagement is central to the research. In order to use this concept, however, it is necessary to identify the dimensions and characteristics of aggregation. Table 1 seeks to do this by drawing directly from the cited literature, synthesising it and producing a template for use later.

The conceptualisations of the aggregation taxonomy (Figure 1) and the role of intermediaries (Figure 2), together with the analysis of aggregation dimensions (Table 1), provide a basis for the data collection and interpretation. This is discussed further in the next part, which provides an overview of the research methodology.

Dimension	Key characteristics
<b>Micro-level ties</b>	
Resource flows	Evidence of activity links - support for access to shared resources as a means of mitigating uncertainties.
Mutual expectation	Evidence of resilient trust - strong existing social or experiential support the formation of resilient trust.
Information flows	Evidence of catalysts - IOS acting as brokers to enable cost-effective exploitation of informational synergies.
<b>Economic</b>	
Nature of transactions	Evidence of value activity - repeat or ad hoc.
Cost of networking	Evidence of internal and external costs - balancing of costs versus benefits. Impact of IOS and functionality.
<b>Strategic</b>	
Motivation	Evidence of scope and scale - cost savings through economies of scale by joint marketing or production.
Perspective	Evidence of intended and emergent strategy - awareness of actors of the strategic implications and opportunities.
Contingencies	Evidence of institutional and relational relationships - instigation of network from environmental conditions or from existing social linkages between actors.
<b>Governance</b>	
Distribution of property rights	Evidence of governance of property rights - contractual agreements govern the behaviour of actors.
Co-ordination mechanism	Evidence of governance of behaviour - relates to the rules of conduct and informal allocation of resources and responsibilities among actors.
<b>Diffusion of innovation</b>	
Change agent	Actors who influence others to encourage adoption of innovation by establishing relevance of innovation and facilitating communication.
Critical mass	Adoption of interactive innovations. Critical mass occurs when enough users have adopted the innovation for further adoption to be self-sustaining.
Intermediaries	Actors who specifically participate with service providers to promote adoption.

**Table 1. Template for the dimensions of aggregation (Lockett and Brown 2006)**

## RESEARCH METHODOLOGY

The overall method of data collection and analysis was rooted in the concept of embedded case design as suggested by Yin (1994). This was appropriate given the novel, contemporary and phenomenological nature of the enquiry. As a general observation the fact that the established base of e-facilitated SME aggregations was very small meant that populating the sample frame was difficult and required each potential data source to be carefully explored. This resulted in the selection of 13 data sources detailed in the next section.

### Selection of cases

In this research a service provider constitutes a case. The selection of cases was informed by the conceptualisations of the aggregation taxonomy and the nature and role of intermediaries, Figures 1 and 2 respectively. A total of 28 potential organisations were identified from literature and Internet searches and these were approached in order to identify senior managers and negotiate access. A total of 12 enterprise intermediaries, acting as service providers, agreed to participate and between them they cover both vertical and horizontal providers, Table 3.

Business description	Size	Provider type	Aggregation type served
Advertising artwork management ASP (AMP)	SME	Vertical	Association
Community management ASP (CMP)	SME	Vertical	Association
Sporting community management ASP (SMP)	SME	Vertical	Association
Dairy herd management ASP (DMP)	SME	Vertical	Cluster
Organic field management ASP (FMP)	SME	Vertical	Cluster
Information management ASP (IMP)	SME	Vertical	Network
Project management ASP (PMP)	SME	Vertical	Network
Utility e-marketplace provider (UMP)	Large	Vertical	Network
E-Business applications ASP (ASP A)	SME	Horizontal	n/a
E-Business applications ASP (ASP B)	SME	Horizontal	n/a
Enterprise application provider (EAP A)	Large	Horizontal	n/a
Enterprise application provider (EAP B)	Large	Horizontal	n/a

\* Enterprise application providers offer both hosted (e-business) and resident applications

**Table 2. Enterprise intermediary data sources**

Dimensions \ Provider type	Vertical ASP								Horizontal ASP		Horizontal	
(bold if in aggregation case)	AMP	PMP	DMP	FMP	SMP	CMP	IMP	UMP	ASP A	ASP B	EAP A	EAP A
<b>E-Aggregation application</b>	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	no
<b>Micro-level ties</b>												
Resources flows (activity links, asset specificity)	yes	yes	yes	yes	yes	yes	yes	yes	limited	limited	no	no
Mutual expectation (resilient trust)	via TTP	via TTP	via TTP	via TTP	via TTP	via TTP	via TTP	via TTP	limited	limited	limited	limited
Information flow (catalysts)	IOS	IOS	IOS	IOS	IOS	IOS	IOS	IOS	IOS	IOS	IOS	IOS
<b>Economics</b>												
Nature of transaction (value activity)	repeat	repeat	repeat	repeat	repeat	repeat	repeat	repeat	repeat	repeat	ad hoc	ad hoc
Cost of networking (impact of ICT, functionality)	new	new	new	new	new	new	new	new	replace	replace	replace	replace
<b>Strategic</b>												
Motivation (scope, scale)	high	high	high	high	high	high	high	high	medium	medium	medium	medium
Perspective (intended, emergent)	intend	intend	intend	intend	intend	intend	intend	intend	intend	intend	intend	intend
Contingencies (institutional, relational)	via TTP	via TTP	via TTP	via TTP	via TTP	via TTP	via TTP	via TTP	limited	limited	limited	limited
<b>Governance</b>												
Distribution of property rights (contractual agreements)	via TTP	via TTP	via TTP	via TTP	via TTP	via TTP	yes	via TTP	yes	yes	yes	yes
Co-ordination mechanism (allocation of resources)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>Diffusion of innovation</b>												
Change agent	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Critical mass (interactive innovations)	yes	yes	yes	yes	yes	yes	yes	yes	limited	limited	limited	limited
Intermediaries (existing, new)	use TTP	use TTP	use TTP	use TTP	use TTP	use TTP	use TTP	use TTP	limited	no	limited	no

**Table 3. Comparison of service provider relationships with SME e-business engagement (e-aggregations in bold)**

**Data collection**

Identification of suitable data sources was undertaken in 2000 and 2002, with the field investigations carried out between 2001 and 2003. Interview data collection took the form of semi-structured interviews with mostly senior managers in the organisations shown in Table 2. The semi-structured interviews covered: the context for e-business engagement and SMEs, including special factors and personal experience; the evidence and nature of aggregation, including governance, intermediary roles and actual or future actors; provider business models, including strategy, structure, processes, revenues,



legal issues and technology. The interviewees' views and experiences of working within an aggregation were captured through the use of the template (see Table 1). Most interviews were conducted on the participant's premises and lasted between 60 and 90 minutes. In many cases multiple interviews were conducted over a period of 18 months. Interview notes were taken and combined with other supporting data to form case notes. The interviews showed considerable internal consistency, suggesting that the sample numbers were representative. Where possible additional data, marketing material, technical briefs and websites, were collected in order to supplement interview data and achieve a triangulation of data sources. All these data sources were compared to help form an internally consistent view of each case.

### Method and initial analysis

Data analysis was undertaken in parallel to data collection. This necessitated a methodical, systematic approach to the multiple site investigations. Specifically, explanation building, which is a type of pattern matching, was used across and within the sample groupings in order to produce defensible research findings. In this technique the goal is to build a structured narrative about each case. Yin comments that because "such narratives cannot be precise, the better case studies are the ones in which the explanations have reflected some theoretically significant propositions" (Yin 1994: 110). In this research the declared in advance interpretive framework, especially the focus on the potential importance of aggregation and the role of intermediaries, proved valuable in preventing drift in what were complicated research situations.

The outcomes of the case interviews are presented in Table 3. For each aggregation case the views, characteristics and activities of the enterprise intermediary are presented against the five aggregation dimensions and the sub characteristics from the original aggregation template (see Table 1). Of particular interest is the comparison between ASPs generally, vertical ASPs (VSPs) associated with an e-aggregation (indicated by bold type in Table 3) and horizontal providers. The three types are discussed, contrasted and summarised below.

Firstly *micro-level ties*: All VSPs displayed evidence of strong activity links supporting resource flows; horizontal providers had limited or no similar activity links. All VSPs evidenced resilient trust, via trusted third parties, allowing mutual expectations to be set and hence facilitated strong network formation. Inter-organisational information systems (IOS) acted as a catalyst supporting information flows of many kinds in all cases.

Secondly *economics*: All ASPs had repeated value transactions compared to horizontal providers who had ad hoc transactions. All VSPs provided new functionality and the value was either actually or perceived by users to be greater than the cost of engagement. All horizontal ASPs and horizontal providers offered replace functionality.

Thirdly *strategic*: All VSPs were associated with high levels of scope and scale in relation to e-business engagement with all horizontal ASPs and horizontal providers associated with lower levels of e-business engagement. All VSPs, via trusted third parties, exhibited significant institutional and relational contingencies.

Fourthly *governance*: All but one vertical ASP negotiated contractual agreements supporting the distribution of property rights via trusted third parties.

Finally *diffusion of innovations*: All providers had characteristics of change agents but only VSPs showed significant evidence of critical mass building, and used intermediaries (trusted third parties) extensively.

### An ASP perspective

All eight VSPs offered applications in a hosted environment on a 'one to many' basis and deliberately developed 'one to many' marketing models. All emphasised that the intermediaries best placed to promote the application were those who had existing relationships within the aggregation. Only two VSPs charged users directly with all others charging the community intermediaries. The latter approach both reinforced the 'one to many' marketing model and enabled community intermediaries to develop their own charging mechanism to users. This deliberate and explicit interaction between the service and community intermediaries was a key characteristic of critical e-aggregation applications and resulted in dual 'one to many' business models for both delivery (hosted) and marketing. This was in direct contrast to the four horizontal intermediaries who were committed to engaging with and promoting to SMEs on a 'one to one' basis even if subsequently they were hosted and supported on a shared 'one to many' basis. In all cases the payment model was direct between service provider and SME user. The business manager for one large enterprise application provider admitted that "whilst we have some customers with only three users, it really isn't economic for us to target customers with less than 20 users with hosted solutions". Interestingly the manager indicated that 20 users was also the point at which resident or in-house systems became

economically viable. This view resulted in a review of the business case for this large enterprise application provider in promoting horizontal hosted solutions to SMEs. Inherently this business model is more expensive and the evidence from the service provider cases was that the horizontal providers were focusing on larger SMEs and divisions of large enterprises on economic grounds and these horizontal ASPs had limited relationships with trusted third parties within aggregations.

An important characteristic to emerge from the use of e-aggregation applications was the accumulation of important information regarding the users and the aggregation itself. Significantly, and in contrast to the SME users, the VSPs were aware of the accumulation of this information and had identified its strategic importance. Not only was the e-aggregation application seen as important in addressing the business needs of users within the aggregations it had also to facilitate this data collection into an 'information repository'. The nature of the information collected was, not surprisingly, as varied as the critical e-aggregation applications themselves. For example, in a construction aggregation information was retained about the individual contracts for each lead client and about each component. The building of these information repositories was a deliberate strategy of both service providers and trusted third parties and was supported by governance mechanisms. The perceived value of the repositories varied both with the intermediary types and across the aggregations. Unlike the critical e-aggregation application, which was of strategic importance to all service providers in that they could deploy it in different forms and markets, the value of the information repository seemed to depend on whether the trusted third party or service provider instigated the development of the applications, though in all cases the trusted third parties retained control of specific information. One of the effects of these information repositories was to increase asset specificity within the aggregations. There was no evidence of a similar strategy amongst horizontal providers.

In conclusion the information repository was an emergent property of the critical e-aggregation applications and provided new value, which could not economically be acquired by other means. VSPs were aware of the strategic importance of this information and incorporated it into their business models.

## CONCLUSIONS

The interpretative framework for the dimensions of aggregations drew heavily on network theory expressed in the ION literature and the findings make contributions to this body of knowledge, particularly in supporting the use of micro-level ties, such as resource flows, mutual expectation and information flows, and governance mechanisms. The research highlighted the importance of inter-organisational information systems (IOS) as catalysts to both network formation and development and in particular the increased structure and integration evident in groupings using critical e-aggregation applications. The deliberate building of information repositories as a means of achieving new value was unsupported in the literature and represents an original contribution from the research.

Finally the practical implications of this research for the ASP sector are that critical e-aggregation applications can result in 'one to many' business models for both delivery and marketing. This was in direct contrast to horizontal providers who were committed to engaging SMEs on a 'one to one' basis even if subsequently they were hosted and supported on a shared 'one to many' basis. Furthermore the role of trusted third parties, such as trade associations, seems to be critical in both the promotion and development of these hosted applications. Where ASPs and trusted third parties worked closely together SMEs engaged in higher complexity e-business collaborative applications which have the potential to provide major economic and competitive benefits.

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