

WHAT INFLUENCES BUSINESS-TO-BUSINESS ELECTRONIC MARKETS' PERFORMANCE? – A STUDY OF FOUR COMPANIES.

A working paper presented by

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Abstract

Electronic Markets were once seen as being the basis for building successful e-commerce businesses. A study of four electronic market e-commerce companies indicates that the future may not lie in that direction. The study indicates that electronic markets cannot be profitable and that the future lies in adopting an alternative business model and / or broadening the services offered to include Consultancy and Training. The research indicates that a number of factors determine that electronic markets are highly unlikely to be successful business models. A model to describe these influences is proposed and titled the “Electronic Market Paradox Model”.

1. Introduction

Internet commerce has gone from being the second industrial revolution to the pariah of investment banks and venture capitalists within the space of barely two years. The value of technology stocks has dropped: By March 2001 the Nasdaq composite index had fallen to its lowest since December 1998 – a decline of 59.2% (approximately \$3,000 billion). The Techmark 100 index in the UK had dropped by 59.8% (FT.com, Sept. 2001). All of this, before the events of September 11th. Is it all bad news in reality? A survey conducted by the Financial Times in February 2001 indicated that the UK food and drink industry was preparing to invest in e-commerce. Benefits cited for Internet procurement over EDI systems were quoted as:

- Lower costs (10% of respondents)
- Information sharing (35%)
- Speed & flexibility (35%)
- Many to many connection (20%)

However, even here there is a word of caution: Of those companies that had already invested in Internet procurement systems, 71% said that the return on investment was currently less than 10%.

So, was e-commerce over hyped? Can e-commerce companies ever turn a sustainable profit? Have they been victims of a fickle market? These are some of the questions this paper seeks to answer through the study of four companies that were set up as business-to-business electronic markets.

2. Theory of Electronic Markets

The potential for the use of the Internet to buy and sell goods and services is generally agreed as being huge (Vroom et al., 2000) but does have two major limitations: Namely, accessibility to the Internet and secondly, the willingness and ability of people to change their habits (Currie, 2000, p30) assuming the right goods and services are available.

Internet services that bring many buyers and many sellers together to transact are termed “electronic markets”. Electronic markets are thought to be attractive to both buyers and sellers because they reduce the cost of a buyer seeking a suitable supplier of a products or service and because they also reduce the cost for a seller to find buyers. Much research has been carried out on the theory of electronic markets:

In the introduction to this paper, the term “electronic markets” has been used, but a formal definition is required: An electronic market can be described as a marketplace of buyers and sellers brought together in the market by an information system that crosses organisational barriers (Bakos, 1997). However, that description alone is not enough to fully describe an electronic marketplace; a marketplace has to have a choice of buyers and a choice of suppliers to avoid it being an “electronic hierarchy” (Malone et al., 1989) - that is, a single buyer connected via an information system to a number of suppliers. Electronic markets existed before the Internet was the main medium for conducting electronic transactions. Currently, the information system that facilitates these markets is the electronic network known as “the Internet”.

Many of the references in this review of the literature predate the use of the Internet, however, the principles of the electronic markets remain as described in the following discussion:

2.1 The nature of electronic markets: The Electronic Market Hypothesis

Although the definition of what is an electronic market is reasonably straight forward and simple to understand, it is important to recognise the attraction of such markets: What attracts buyers and sellers to them – why it is that there appears to be such certainty that buyers and sellers will come to them? The theory of electronic markets is rooted in what is termed the “Electronic Market Hypothesis” (Malone et al., 1989). Electronic Market Hypothesis (EMH) describes the principles, nature and evolution of electronic markets. In their description of EMH, Malone et al. observe:

“By reducing the costs of coordination, IT will lead to an overall shift toward proportionately more use of markets –rather than hierarchies- to coordinate economic activity.”

Their argument, therefore, was that IT could be used to eliminate or reduce the costs associated with a business transaction (for example, searching for a seller / supplier, comparing prices, exchanging paperwork) and that this goal would act as a driver for businesses to create electronic markets. They also predicted that industries would follow an evolutionary path in transforming to electronic markets:

EMH predicted that electronic markets would move from “Electronic Hierarchies” (direct IT link with one supplier, e.g. EDI) to a “Biased Market” (product able to be searched from a number of suppliers) to an “Unbiased Market” (product able to be searched from all suppliers) and, finally, to a “Personalised Market”, where personal decision aids help the buyer to find the best deal (also see Table 1 below).

The underlying principle of electronic markets, co-ordination cost reduction, has its roots in the theory of Transaction Cost Economics (Williamson, 1981) in two ways: Firstly, a reduction in Search costs (the cost of finding a buyer or seller in a market) and secondly, in terms of asset specificity: That is, it may no longer make sense for organisations to carry out some operations in-house because external suppliers of the particular goods or service will be easy to find. Allied to asset specificity is the idea that product complexity will be less of a barrier to buyers because they will more easily be able to compare products or services and so be able to make decisions based on product specification and price. Who is likely to gain the most from this? Most

obviously, it would be the buyer: As search costs decrease through lower cost information technology and the amount of information about sellers' products increases, then like for like comparisons become easier and the market more competitive.

Malone et al. propose a clear evolutionary path for electronic markets: Starting from an electronic hierarchy (e.g. one buyer connected to multiple sellers) to an electronic market (many buyers connected to many sellers) and then through the evolutionary steps listed in the table below:

Step	Definition
Biased Market	Suppliers use technology to push customers towards their own product or service offering, whilst providing access to other sellers' product or service offerings.
Unbiased market	Equal access to all sellers' offerings.
Personalised Market	In this stage, searches can be personalised to "filter" out offerings that do not closely match the buyer's requirements.

Table 1: The Evolutionary Steps of EMH (Malone et al., 1989)

Malone et al. looked at the airline ticketing industry and ILS (Inventory Locator System) which was an early EM for buying / selling aerospace spares; since then, many other studies have been published, with mixed results: Some can be said to support EMH, whilst others suggest it only partially describes electronic markets and their evolution. That research is discussed below.

Although EMH provides a logical framework for the way in which electronic markets work, the original work did not cover the whole potential scope for electronic markets: For example, differences between commodity and differentiated markets, where buyer and seller behaviour differs, and the effect electronic markets would have on prices, supplier attitude or the sustainability of the electronic market. The

application of established economic models of search (Bakos, 1991) provided some insight into the potential for electronic markets. Bakos put forward the view that the economic characteristics of electronic markets also included switching costs (costs associated with switching supplier and purchasing a product that is not exactly the same as the one previously purchased) and “uncertainty of benefits” (uncertainty concerning the tangible benefits to the various parties of using the electronic market). To this extent, their work did not specifically look at what would happen if buyers and sellers failed to accept the technology and use it.

A contra argument to the drive toward electronic markets is that Transaction Cost Economics does not give due consideration to qualitative aspects; this is discussed in sections 2.2 and 2.3 below.

2.2 The effect of Changes in Search Costs

Bakos examined two areas: Search costs in differentiated and commodity markets and Strategic conduct in electronic marketplaces. Through the application of economic models, an understanding of both the conduct of participants in electronic markets and the consequences of changes in search costs could start to be understood.

For commodity markets, the concept of “Reservation price” (Rothschild, 1974; cited Bakos, 1997) was used. The concept of reservation price works on the principle that the expected gain from using an electronic market would equate to the previous cost of searching. Bakos argued that the resulting impact of search costs on commodity markets would be fourfold:

- Seller prices would decrease as search costs decreased.
- The amount of searching would increase as search costs decrease.
- The amount of searching would increase as seller prices become more dispersed.
- As sellers’ prices become more dispersed, buyers’ costs decrease.

For differentiated markets, Bakos utilised the “Unit Circle” model (Salop, 1979) which works on the basis of a buyer searching until a product or service close enough to their preference is located; as search costs decrease, buyers become more and more

demanding and are prepared to search for a product or service which more exactly meets their ideal requirements. On this principle, as search costs decrease, price premiums and seller margins increase.

It was clear that these principles would have an effect and Bakos concluded that the strategic conduct of electronic markets could be impacted in the following ways:

- There might be an early mover advantage.
- That the sustainability of intermediaries is likely to be greater where the electronic market controls the market transactions and access to customers.
- Information intermediaries are likely to enter individual markets with industry participants that provide industry specific expertise.

Study of the effect of reducing search costs on the emergence of new markets or the maintenance of existing markets (Bakos, 1997) suggests that a seller's best strategy for electronic markets may be to control the type of system introduced; a system that emphasised product rather than price may enable some retention of margin and even command a fee for its use. He cites the airline industry as an example concerning ticketing, whereby lower search costs (for the consumer) are compensated for by making it difficult to compare prices due to complex fare structures, availability etc. (Dahl & Miller, 1990; cited Bakos, 1997) and that a move by American Airlines to simplify fare structures was resisted by other airlines (Kleit, 1992 cited Bakos, 1997). Bakos argues that airline reservation systems fit the model of an electronic market in a differentiated market. Given that there appear to be real reasons for sellers (at least) to be wary of the move to electronic markets, does EMH adequately describe what is observed? Some early research indicates that electronic markets are more efficient than conventional markets as far as price levels and price elasticity. Where significant price dispersion has been found, it can be explained by retailer-specific factors such as Branding and trust (or fear of transaction risks) or price discrimination strategies (Smith et al., 1999)

2.3. Alternative views on EMH

A study of computerised loan systems in the home mortgage market (Hess & Kemerer, 1994) concluded that either the full results predicted by EMH require a longer gestation period, or that it needs some modification to fully explain the observed results. The work looked at five case studies and observed that the best of those cases could be described as an electronic hierarchy. Why should that be? Hess and Kemerer proposed some alternative views that provide some insight into why the take up of electronic markets may not be as easy or as rapid as EMH may indicate:

- Transaction risk: The risk of opportunistic behaviour by the other party to a transaction in an electronic market. This may indicate that buyers prefer to form more tightly coupled, cooperative relationships with suppliers. This equates to an amended form of EMH termed the “move to the middle hypothesis” (Clemons & Row, 1992; Clemons et al., 1993).
- Suppliers may refuse to participate in electronic markets because they perceive that most benefits would be captured by buyers and that there are declining marginal returns (Siedmann & Wang, 1993).
- There are “non-contractible investments” in any transaction that may lead buyers to limit the number of suppliers they engage (Bakos & Brynjolfsson, 1993)

This view that the adoption of electronic markets faces real barriers was strengthened by a study of agricultural product markets (Lee and Clark, 1996) who identified several barriers to adoption:

- Transaction risks created by the “new alternative market form” i.e. The electronic market.
- Lack of market power to enforce the use of the electronic market.
- “Bounded rationality”: People having to make buying decisions with limited knowledge or information (about the supplier or quality of goods, supplier cost structure, capacity, customer base for example).
- “Opportunism”: How does a buyer know that they really are getting a good deal? Is the supplier working to a different agenda? The possibility that costs or prices will not be favourable to the buyer due to demand for example (Williamson, 1981).

If the view is taken that transactions via an electronic market are like any other contract, there are always difficulties in writing complete contracts. That is, contracts that adequately specifies the tangible and intangible elements that are required to satisfy the buyer that a transaction has been successful (these can be thought of as tacit contractual terms). In an electronic market environment, there are usually no opportunities to meet the other party in person and so issues of trust are likely to be more pronounced than in a more traditional buyer – seller relationship (Pisano et al., 1988; Pisano, 1989; Teece, 1980; Silver, 1984; Mowery & Rosenberg, 1989). More recently, the problems around constructing good electronic contracts has been recognised in a document published by the Auditing Practices Board (2001).

From the discussion above, it is possible to conclude that Transaction Cost Economics does not on its own provide an overwhelming driver to use electronic markets. Traders have to be convinced of the benefits of participating in an electronic market both from an economic viewpoint and on the grounds that the intangible elements of the transaction are assured – for example the quality of the goods and supplier.

Further evidence that EMH does not fully describe the complexity of electronic markets is provided by a later study of ILS (Inventory Locator System), Choudhury et al. (1998); the study concluded that current models did not reflect the true complexity of electronic markets and provides examples of the system helping buyers find better prices and of sellers obtaining a price premium through providing more detailed or accurate information about parts and their availability. The study also concludes that ILS has had little effect on the use of brokers in the industry, or on inventory levels. They developed a model of the effect of electronic markets on an industry.

A study of AUCNET, the Japanese electronic car auction market, provided evidence that use of an electronic market actually resulted in higher prices for the seller (Lee, 1998). This was the result of both the application of rigorous quality control concerning the vehicles reaching the market and the lack of seller transport costs through not having to physically take unsold cars back to their home location. This study actually supports the model posited by Choudhury et al: The fact that there was strict quality control over the cars allowed into the auction is analogous to the models moderating construct of “Product Differentiation” and the lack of logistics costs to the

seller can be viewed as analogous to the “Scope of the Electronic Market” and “Cost of access” moderators. The AUCNET example demonstrates that removal of transaction costs (logistics costs) and elements of transaction risk (quality of product) can drive the acceptance of an electronic market.

The evidence from the various studies suggests that the general proposition of EMH may hold true, but that evidence for the complete picture of EMH is lacking. This is not entirely surprising, because open (unbiased) electronic marketplaces have not been widely available for very long (certainly not to the general consumer); also the decision concerning whether or not to use an electronic market often resides with the individual buyer or seller and a number of factors could affect that decision. This view is supported by a study of retail financial services and the music industries (Daniel and Klimis, 1999) that compared EMH to the observed status of electronic markets in those markets. The study made a number of conclusions:

- EMH is generally accepted as valid and that it can be expected that both industries will evolve toward personalised markets and that there might be two variants of these markets: Regionalised personal markets (buyers prefer suppliers that are not very remote or who do not have established credibility – financial services)
- Reverse markets (suppliers bid to win business from published buyer requirements) this is a concept that had previously been proposed by Hagel & Armstrong (1997).
- There was a lack of evidence of unbiased marketplaces and that this might be due to factors such as a lack of numbers of retailers that have transitioned to EMs, the persistence of customer preferences to shop in the physical world or customers remaining loyal to suppliers instead of searching EMs.

2.4 Pre and Post Internet Electronic Markets

The work presented above is a mixture of studies of Electronic Markets that are both pre-Internet and post-Internet. The fundamental differences between the studies is that over the past few years, networking technology has become available in a large number of businesses and homes and that people have become used to both the concept of purchasing goods and services electronically. However, the underlying principles of electronic markets remain fundamentally the same – it is the choice of EMs (in terms of variety) and the deployment of the technology that have changed. Electronic Market Hypothesis was revisited more recently (Daniel & Klimis, 1999) focusing only on Internet companies and was still found to be largely relevant.

Whilst the discussion has already visited the subject of transaction costs and search costs, there are other important aspects that can determine the success of Electronic Markets that warrant further discussion: In Internet retailing, it has been found that such factors as branding, awareness and trust are important (Brynjolfsson & Smith, 2000). One aspect of business to business transactions that is analogous is the buyer-supplier relationship. This relationship can take on several forms: discrete transactional relationships, co-operative understanding, long-term contracts or ownership (Ellram, 1991). Evidence has been documented that suggests the buyer-supplier relationship has evolved in recent years in response to the increasingly competitive environment, and that this change has been towards the intention of integrating business processes and enhancing quality. Factors in the relationship with a supplier include quality of goods and services; quality of ordering, quality of delivery and quality of post purchase service. (Imrie & Morris, 1992).

Factors such as responsiveness of supplier, growth potential of a supplier and a long track record are also important (Matthyssens & Van de Butle, 1994). In the modern concept of Electronic Markets enabled by the Internet, Tang et al (2001) propose another key relationship: That with the information supplier (ISP) who provides access to the network and IT facility management relative to the transaction.

One possible consequence of a much wider choice of supplier and a consequence of the possible lack of knowledge concerning those suppliers is the proposed rise to prominence of a information – based intermediary (the Infomediary) who would bring knowledge to facilitate transactions (Grover & Teng, 2001).

2.5 Conclusions on Electronic Markets

From the discussion above, it is possible to conclude that studies of a variety of industries indicate that EMH does not fully describe the observed facts although it does appear to have a reasonable degree of validity.

From the discussion, three key variables can be derived: The first variable is Business Models as they apply to electronic markets. More specifically, what is the variety of business models that can be typically found in the business-to-business arena and do they evolve in the way predicted by EMH? The second is business performance in terms of identifying the factors or elements that determine whether or not an electronic market will be successful. The third is acceptance of the technology by the users and potential users: Will the electronic market technology be accepted by potential users?

Perhaps the dichotomy of electronic markets and EMH can best be summarised by a paper (Grover and Ramanlal, 1999) wrote to discuss ways in which sellers can survive the intensely competitive environment foreseen by EMH. The paper presents a provocative view in terms of six myths and counter-myths of IT and markets. The conclusions are uncertain: If electronic markets are effective markets facilitated by IT, then there are four drivers towards price competition:

- Reduction in transaction costs
- Reduction of perceived product complexity
- Reduction in Asset Specificity
- Increase of free information flow

However, it may be possible for suppliers to utilise information technology for their own benefit and that electronic markets may not always work in the customer's favour. Examples might include making price comparison difficult or exploitation of small niches, or the AUCNET example where careful control of the quality of goods brought to the electronic market combined with lower seller costs actually keeps prices higher than in "traditional" markets.

Although many of the studies carried out on Electronic Markets have been pre-Internet, the basic principles of EMH appear to be relevant in the Internet environment. Further, factors other than the more quantitative transaction cost question are relevant; for example, the nature of the buyer supplier relationship, concerning trust and awareness. Therefore, it is important to consider both the quantitative and qualitative aspects of using Electronic markets: The quantitative aspects focus on the benefits of lower transaction costs and on the one hand, how this is beneficial to all, but on the other hand that the greater transparency of prices and the competitive intensity resulting from low search costs may lead to reduced margins. However, it is clear that the quantitative aspects relating to electronic markets do not show the whole picture. Qualitative aspects concerning the buyer-seller relationship, trust and tacit contractual terms are all important in understanding how electronic markets work.

Overall, it may be that the range of EMs studied and the limitations on the time span over which they have been able to be studied are inadequate to conclusively prove or disprove EMH. Consequently, there are many opportunities for further research relating to electronic markets. For example, the evidence presented in the review of prior work identifies some of the drivers for and against the use of EMs, but it is still unclear whether different models of EM perform differently, or if they will evolve in the way that EMH predicts or whether EMs will be a technology that is adopted widely.

2.6. Business Models

Building on the definition of the first research variable, *electronic market business models*, defining these can be challenging, as such organisations often have a variety of revenue streams. It is, therefore, necessary to examine ways in which business models can be defined and described. One of the methods used to define business models for this type of firm is a taxonomy (Rappa, 2000) to describe a business model according to its sources of revenue. However, Rappa's definitions according to revenue source are not the only way in which one can define an organisation's nature.

Porter (2001) states that a business model should be defined by the way in which the firm creates value, not just revenue. That is a very relevant point, as many electronic markets have focused on revenue generation rather than value. Mintzberg (1979) developed an organisational typology that classified organisations in terms of their structural configuration and the nature of their environment (simple, complex, diversified); these are termed structural configurations. In terms of electronic markets, the environment could certainly be described as “Dynamic” and, for the most part, electronic market companies tend to be simple in their structure. On that basis, they would be termed “simple structure” under Mintzberg’s classification method. However, because many of the firms that operate as electronic markets would all be classified in a similar vein, the value of trying to utilise this method of defining organisational types would be very small.

Garbade (1982) described EMs as being classified into four categories:

- Direct search markets
- Brokered markets
- Dealer markets
- Auction markets

Whilst this is a useful description, it is a little too generic to be of great use in differentiating electronic market models. Mintzberg looked very much at the internal structure of an organisation, while Garbade’s description looks more to the business model: The nature of the transactional business processes (at a high level).

Timmers (1999) defines a business model as:

“

- An architecture for product, service and information flows, including a description of the various business actors and their roles; and
- A description of the potential benefits for the various business actors; and
- A description of the sources of revenue.”

This appears a fairly comprehensive, if clumsy, articulation of a business model although it doesn’t directly mention value. However, one could interpret the concept

of value as being included in the statement concerning benefits. Timmers goes on to classify electronic commerce business-to-business models into:

- E-shops
- E-procurement
- E-malls
- E-auctions
- Virtual communities
- Collaboration platforms
- Third party marketplaces
- Value chain integrators
- Value-chain service providers
- Information brokerage, trust and other services.

However, Timmers defines these business model types at a high level.

Malone et al. (1999) describe a method for analysing processes to capture the specific details. The approach originates from computer science (inheritance) and from coordination theory (managing dependencies) and has the advantage of being able to identify similarities and differences between processes. This technique, although not explicitly designed to categorise organisations could be used in conjunction with a classification model such as Rappa's. The advantage of such an approach would be to enable a general classification based on revenue streams to be made and then a more in-depth analysis to identify the details of similarities and differences that might influence business performance.

A four layer framework for measuring the size of the Internet economy was developed by Barua et al. (1999). Two of the layers of the framework (the "intermediary layer" and the "commerce layer") were used to describe general Internet commerce business models (Mahadevan, 2000). Mahadevan divided the models into three "Market Structures":

- Portals
- Market makers
- Product / Service providers.

Although this form of categorisation can be useful, the research proposed in this document will require an additional level of depth in defining business models in order to ensure specific differences are visible.

2.7 Business Performance

Measuring the business performance of Electronic Market companies is not quite as straightforward as one might think; an obvious measure would be financial performance, but the volatility of market prices and the lack of profits suggest that such conventional measures of performance are not appropriate for these types of company if a meaningful comparison is to be made. So what would constitute a suitable measure(s) of business performance? Business performance can be measured in terms of the Balanced Scorecard concept (Kaplan & Norton, 1992). The balanced scorecard provides an integrated performance measurement system designed to encompass a number of different aspects of an organisation's performance and to flow from organisation strategy and vision down through all levels within the organisation (Kaplan & Norton, 1996).

The balanced scorecard is designed to measure the following specific areas of performance:

- Customer Satisfaction
- Internal Business Process performance
- Innovation and Learning
- Financial Performance

The balanced scorecard is a means of encompassing a wide variety of relevant performance measures. An example of application would be the case study of Sydney Electric (Langfield-Smith & Madden, 1998) where the concept was used to develop productivity and performance indicators. For the purpose of this research, the focus is

on how electronic markets measure their performance and this will be analysed in the contest of the balanced scorecard concept.

2.8 Technology Acceptance

From the discussions on electronic markets and EMH above, prior research has identified barriers to the adoption of EMs. Adoption of an EM is absolutely key to its success: If the EM is not adopted, there are no revenue streams; therefore, it is important to know whether or not an EM's target customer base intends to use the technology or not.

A number of models have been developed with the aim of explaining what determines whether or not a particular information technology is accepted by potential users (eg, Davis, 1989; Davis et al., 1989; Mathieson, 1991; Moore and Benbasat, 1991). A common aim of these models is to develop tools to predict information system acceptance thus enabling design changes to be made that increase the chance of acceptance (and hence usage) by the target audience. The research described in this paper aims to explore technology acceptance from the point of view of the electronic market operator. For example, are attitudes to technology of customers and potential customers measured? If so, how? Has acceptance of electronic market technology been an issue?

2.9 Market Turbulence and Competitive Intensity

The success or otherwise of any electronic market, or company, should be seen against the backdrop of the external market environment in which it operates. Kohli and Jaworski (1993) identified four moderators that influence the relationship between the market orientation of an organisation and its business performance:

1. Market Turbulence
2. Technological Turbulence
3. Competitive intensity
4. Performance of the economy

There is no reason to believe that these “moderators” do not also influence the relationship between electronic market business models and their performance, given

that they are technological companies operating in volatile market conditions. In an empirical study, Jaworski and Kohli (1993) included three of the four constructs and omitted “Performance of the Economy” on the basis that it appeared too complex to measure. Their results, however, did not support the moderating effects of these variables. A study by Slater & Narver (1994) also look at the moderating influence of market turbulence, technological turbulence and competitor concentration on the relationship between market orientation and business performance; they found partial support for these moderators.

From the discussion above, it is possible that market turbulence, technological turbulence and competitive intensity (concentration) may be moderating variables in the electronic market business model – business performance relationship. Therefore, these three variables will be included in this research.

2.10 Overall Conclusion

Drawing all of these elements together, it is possible to identify where the research proposed here fits with the previous researched described above:

Research conducted on the theory and working of electronic markets views the subject mainly from the buyers’ or sellers’ perspective. It does not focus on how the electronic market itself should operate. Business models are described without consideration at a detailed level, of which would work most effectively. A number of business performance models are available; however, no literature appears to directly address the performance of electronic markets (as a business entity) in terms of the business models and processes adopted by those markets.

Although EMH describes a progression or evolution of EMs, the body of evidence for its accuracy is ambiguous. That evidence has been collected from research both in pre-Internet and post-Internet environments and does appear to be consistent. The literature has demonstrated that electronic markets are founded on the sound principles of Transaction Cost Economics or coordination costs related to business transactions. From these principles, the Electronic Market Hypothesis was developed, but evidence to confirm EMH as an accurate description of electronic markets in

general is lacking. Research has also been carried out that indicates an important intangible or tacit element to whether or not buyers are prepared to transact using electronic markets – whether those elements are tacit contractual requirements, trust or a willingness to use the technology. The acceptance of technology has in its self become a significant area of research and much research has been conducted to model the factors that influence the adoption of the Internet.

Three variables were identified from the literature as being important: The electronic market business model, the business performance of the electronic market and the acceptance of the electronic market technology by potential users. A number of ways of representing business models have been researched ; one practical way is to model a business from its processes and identify which processes differentiate it from other businesses.

Business performance measures have also been researched. Many, indeed most, seem to be financial in nature, however, financial measures may not be the most appropriate means of measuring electronic markets as many are very new and do not have a meaningful history – combined with the fact that the market is very volatile and so comparing like with like is difficult.

Technology acceptance has been researched and a model, derived from the Technology Acceptance Model, has been identified that appears capable of being applied in an internet environment to model the factors that influence the adoption of a technology by potential users (Davis,1989).

In conclusion, the proposed research aims to contribute to the body of knowledge concerning the relationship between the electronic market model and its business performance, with consideration of moderating influences, particularly market conditions and the willingness of potential users to accept the technology

3. Research Model

From the discussion and analysis of prior research, presented above, are derived a research model (figure 1. below) and research questions.

This model has User Acceptance and Competitive Intensity and Turbulence as Moderating Variables. In this model, Business Model, Turbulence, Competitive Intensity and User Acceptance are the independent variables and Business Performance is the dependent variable. Both of the independent variables can be controlled: The research sample has been chosen to compare a variety of Electronic Market types using a case study methodology (see section 4 below).

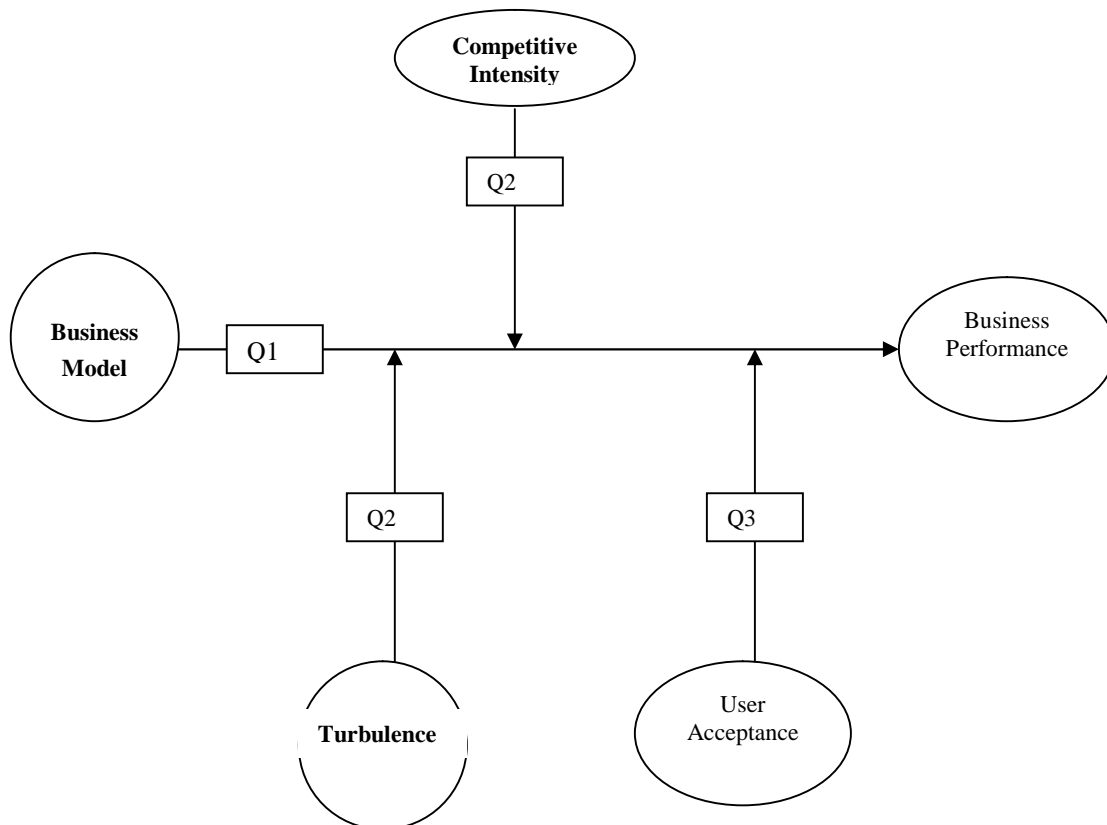


Figure 1: Proposed Research Model

The research model seeks to answer three questions:

- Q1: How is the business performance of electronic markets influenced by the nature of the EM business model?
- Q2: Do Turbulence and competitive intensity within the business environment act as moderators on an electronic market's business performance?
- Q3: Does acceptance of EM technology by potential customers of the electronic market moderate an electronic market's business performance?

4. Methodology

In this research, Case Studies provided the data used to describe the relationships between the variables. The case study methodology was a descriptive case study method (Yin, Cited Bickman & Rog, 1998; Lynd & Lynd, 1929; Whyte, 1955) with the unit of analysis being the Electronic Market (as one firm may have multiple EMs).

A sample of four companies was chosen, reflecting a variety of business-to-business electronic markets. These four companies were the subjects of a multiple case study, with the unit of analysis being defined as the company operating the electronic market (Maxwell, in Bickman & Rog, 1998, p241). This sample size is justified by the nature of the research and the resultant degree of certainty the research demands: In the field of electronic commerce, it is quite common to base studies on a single case and a single company in a single market. This research seeks to obtain a cross-sectional view of electronic markets and identify some of the key business performance issues resulting from a particular type of business model. The researcher acknowledges that companies operating in this field are dynamic and that the research represents a snapshot. Therefore, a very high degree of certainty is not absolutely necessary and a smaller sample size is justified (Maxwell, in Bickman & Rog, 1998, p241). Indeed, of the twelve companies originally chosen as potential research partners, six went out of business during the course of this research and a further five underwent extensive changes at senior management level. Consequently, there was an impact on the research undertaken in terms of personnel changes. However, those companies that agreed to participate continued to do so.

The Electronic Market Business Models are described by way of process decomposition diagrams (Rummler & Brache, 1991; Malone et al., 1999), together with descriptive rich text (Yin, 1994). This qualitative method of representing the business model allowed common features as well as differences between models to be clearly identified and documented. The models were initially constructed by researching the companies' web sites and documenting the services the companies offered. The models were then validated during the course of the structured interviews and modified to reflect the views of the research partner companies' people.

The technique used for collecting qualitative data for the Business Model, Market Turbulence and Business Performance constructs was that of conducting structured interviews (Bickman & Rog, 1998, p22). The interviews were conducted with executives of the electronic market companies; specifically, interviews were held with the following personnel:

1. Company A: CEO and Financial Director.
2. Company B: Managing Director, Head of Strategy and Marketing Director.
3. Company C: Financial Director and CEO.
4. Company D: Managing Director and Sales Director.

The interviews were held over a period of three months using the interview structure attached as Appendix I. The period of time taken was a positive advantage because the researcher was able to complete the initial interviews relatively quickly, then revisit the companies after a further month had elapsed to gather updated information and then again a further month later, thus obtaining three snapshots to capture any changes occurring with either business models or what was being measured.

Interviews were conducted both as individual sessions and then as joint sessions between the interviewer and the personnel employed by the participating company. The interviews were recorded onto cassette and then transcribed onto Word 2000 software. The interviewer and the transcriber were in all cases the researcher, so avoiding any inconsistencies. The researcher is a trained interviewer and, therefore, confident and competent. Transcribed interviews were signed off by the interviewees as a fair reflection of the discussions that took place.

5. Results

5.1. Process description of business models

For each of the four sample companies, a process model was developed to represent their business model using a process summary display (Malone et al., 1999). The process models for the four companies are illustrated below.

The process models were constructed initially using data provided by the companies (sales literature, Internet Websites, verbal descriptions). The process models were then validated during interviews and meetings with executives of the companies and against documented processes or procedures (for example, ISO 9000 procedures where necessary). These models are illustrated in Appendix II.

Note: The list of process activities listed above is not exhaustive. They represent the activities that the personnel interviewed considered to be key to differentiating their organisation from another.

Analysis of the activities listed is able to provide to provide a view of how similar or how different the companies are: Each process task was considered an attribute of the business model of the company, a matrix comparing the percentage of shared process attributes for each company was constructed (see Table 2 below). Table 2 illustrates the percentage of process steps common to each of the companies studied.

Shared processes	Company A	Company B	Company C	Company D
Company A	100%			
Company B	8%	100%		
Company C	7%	22%	100%	
Company D	7%	7%	7%	100%

Table 2: Process Activity Attributes Shared

The results are logical in the following context:

Although all of the models examined are electronic markets, Company A is highly specialised and offers a very broad range of services other than the EM. Company B is a generic purchasing Portal and that is the main focus of its activity. Similarly, Company C focuses on its electronic market activities, but is highly specialised – operating in one market only; therefore it would be expected to share some characteristics with Company B. Company D on the other hand has a much broader range of activities than any of the other companies and is evolving towards an ASP business model.

5.2 Interviews

A number of interviews were conducted at each of the companies studied. The interviews were conducted at the offices of the companies and were carried out with the participation of senior executives of the company: Managing Directors, Financial Directors and Sales Directors or equivalent. The interviews were conducted over a period of three months, being continually updated with any new information affecting the variables being studied. Summaries of the interviews for each of the companies are given below.

5.3 Themes emerging from the interviews

The data collected during the interviews relate to the constructs of the research model proposed in above. During the interviews, a number of themes emerged that related to the research model. A cross-case analysis of the themes relating to the research model constructs was conducted. This method enables a deeper understanding of causes and effects observed during the case studies. Although it has been argued that cross case comparisons are inappropriate in qualitative studies (Denzin, 1983; Guba & Lincoln, 1981), it is important to assess the applicability of the research results across similar cases (Firestone & Herriot, 1983) otherwise no generalizability can be observed cross case analyses are also supported by Yin (1984) who is an advocate of a “replication strategy”. The approach adopted in the presentation of the results that follow is one of “variable oriented strategies” (Miles & Huberman, 1994, p 175). Specifically, the examination of recurring themes, a technique that can identify

variables that would not be wholly clear without cross case analysis (Eisenhardt, 1989).

5.3.1 Business Model and User Acceptance

Table 3 is a “Clustered Summary” table of the themes identified from the interviews conducted on the four companies (Miles & Huberman, 1994, p182) for the variables “Business Model”, “Market Conditions” and “User Acceptance”.

The table is constructed to cross reference the theme to the companies (A, B, C or D) that identified the theme. In this way, a degree of commonality can easily be identified.

VARIABLE	THEME	COMPANY				ILLUSTRATION
Business Model	Retention of technical staff is critical to continued success.	A				“...technical staff once qualified as programmers can move on quickly.”
	Sales is a key process	A	B			“...the ROI service is a foot in the door and is the evidence people need to make a decision.” “This process is seen as a key differentiator.”
	Credibility is key.	A				“Product must work from day one...”
	Target first adopter companies to maximise success.	A				“...they are most likely to buy.”
	Future is more complex software that can automate more.	A				
	Future focus will be on becoming an ASP business model.	A		C	D	“...that might involve the development of specialist software applications that could be downloaded and licensed via the Web in an ASP type business model.”
	Supplier Management through the use of Service Level Agreements (SLAs) is key.		B			“..a key part of the management of suppliers involves the setting up and monitoring of SLAs.”
	Margin is a challenge.		B	C	D	“Exchanges put pressure on margins because of the increased transparency, and we are experiencing margin reductions.”
	Evolving Service lines (eg, Professional Services, changing from EM to MSP)			C	D	“...takes the company away from reliance on a transaction fee in what is essentially a commodity market, subject to eroding margins.”

VARIABLE	THEME	COMPANY				ILLUSTRATION
	Risk of market bias.			C	D	"...it might be possible for a few large players to manipulate the market price..."
	Industry knowledge a key differentiator.				D	
Market Conditions	Market is difficult, but growth will still occur.	A	B			"Growth will still occur, but at a slower rate." "...we are moving into a recessionary phase in the UK and that will make customers focus on propositions centred on cost reduction rather than expansion."
	Market is buoyant.			C		"...market is reasonably buoyant at present."
	Market is tough.				D	"...market conditions are very volatile and very tough...markets are going out of business as cash runs out through excessive burn rates of working capital and adoption by users remains slow."
User Acceptance	Technology acceptance is a significant barrier to success: It limits the market's liquidity.	A	B	C	D	"...technology acceptance is an issue, but possibly less so with early adopter companies." "...the service is not difficult to sell, but getting people to use it is a major challenge." "...in a very traditional industry sector, getting the new technology accepted by users is not easy."
	Quality of Customer data is poor.	A			D	"If clients have not cleaned the data used to populate (the electronic market) then users tend not to be confident and are slow to adopt it."
	Training users has to be included in the service.	A			D	
	Cost of implementing for customers higher than expected.				D	"...this was complex, timeconsuming and expensive."
	Design of the Web pages helps increase adoption.	A			D	"This ensures intuitive navigation for users and that the product is easy to use."
	Customers do not expect to have anything to do with their processes once they are outsourced.	A				"This is a governance issue."
	Buyers do not want to damage existing relationships with suppliers.		B	C		"...buyers have already invested in relationships with their suppliers and therefore do not want to take the risk of conducting transactions with sellers who are unknown to them."

Table 3: Clustered Summary Table of Themes

Conventionally, the view is that only quantitative studies can yield strong causal attributes; however, qualitative analysis is a very powerful way of assessing causality (Miles & Huberman, 1994, p147). It is able to include underlying variables and the connections between variables and processes. A technique that is very useful for qualitative analysis is that of “analytic induction” (Manning, 1982; Miller, 1982): After identifying an initial explanation of a phenomenon identified in a single case, other cases are examined to determine whether or not the phenomenon (a causal linkage) is supported in a more generalisable sense. From the results recorded in Table 3, a number of themes were identified. These themes are observed phenomena to which a cause can be attributed.

Interviewee responses concerning business models revealed a number of insights: For example, the importance of a robust sales process. The majority of the companies also felt that the future lay in a very different business model – that of an Application Service Provider (ASP) rather than a model based on the electronic market concept.

A majority of the companies participating in the research felt that margins were inevitably going to fall because the electronic market model increased transparency of prices and the market in general (cf Bakos’ effect of search costs, 1997). Their explanation for this was that sellers coming into the market argued that as buyers demanded lower prices, their (the seller’s) margins would be reduced. Therefore, they did not want to pay the commissions or transaction fees being demanded by the market operator. This despite the observation that some of the electronic markets had spent very significant sums in cleaning and formatting product data supplied by sellers so that it would be compatible with the website structure. On the other hand, buyers argued that because they brought large buying power to the market (and therefore attracted sellers to the marketplace) they did not want to pay standard fees or commissions either. The effect of this was a substantial reduction (up to 90%) in the fees the electronic market was able to charge users. It is no surprise that the future seemed to lie in an alternative business model.

The exception to this was Company C, who specialise in a very specialised industry-specific market in which the number of transactions is low, but they are of high value.

This also fits with the Bakos view concerning commodity and differentiated markets (Bakos, 1997).

The interviews also provided some interesting insight into the area of technology acceptance: All companies experienced issues in getting people to readily adopt the electronic market technology. However, in one case (Company A) it was felt that it was not such an issue where customers were generally early adopters of technology generally. In order to get customers to use the electronic market frequently the EMs had to invest substantially in training the customers' staff. For the most part, this was carried out free of charge – thus putting further pressure on margins. Some of the causes of non-adoption included:

- Web site design.
- Ownership of the buying process (ie Customer has to take some responsibility to ensure implementation).
- Fear of damaging relationships with existing suppliers.

5.3.2. Turbulence and Competitive Intensity survey answers

Qualitative data pertaining to market conditions was collected during the interviews and has been presented in Appendix IV. Some quantitative data was gathered from interviewees using questions described in the structured interview schedule attached as Appendix IV. The questions have been used and proven to be reliable (Jaworski & Kohli, 1993) The results provide a useful benchmark of how electronic markets view the market environment that can be used as a comparator against both the pilot study and the survey of purchasing executives.

From the data collected, one might summarise the results as follows:

- High technological turbulence, with research and development activity being constant.
- Moderate customer turbulence.
- Moderate levels of competitive intensity.

A note on the Market Turbulence results: The interview measurements of Market Turbulence were recorded before the events of 11th September 2001. Following the attacks on New York and Washington DC, world markets experienced a great deal of turbulence in terms of equity price volatility, fears of global recession and the UK saw large numbers of job losses across industry. The results presented in Appendix IV, therefore, might be an understatement of market turbulence and competitive intensity from the electronic markets' point of view.

5.3.3. Business Performance

The variables measured by the four companies and regarded as important were collected during interviews. These “business performance measures” are described in Appendix V and categorised according to the balanced scorecard concept (Kaplan & Norton, 1992).

Of the companies participating in the research, none regarded measures of Innovation and learning as being key to their businesses. All companies except company C had some form of customer satisfaction measures, all except company D considered some form of measurement of their internal business processes as important; all thought financial measures of some form to be key. Of the four companies, only company C displayed the performance measures in the workplace. All companies produced monthly management reports. The most common measures across the four companies are highlighted in Appendix V. The lack of Innovation & learning measures is interesting, given that company A particularly believed the retention of technical staff to be key to its success.

From the results obtained, it is evident that there are few commonalities between the companies studied concerning performance measures used. Further, none of the companies used a balanced scorecard format (Kaplan & Norton, 1992):

- None of the companies had measures for innovation & learning.
- Company C had no measures for customer satisfaction.
- Company D had no measures for internal business processes.

Surprisingly, Companies A and C did not seem to monitor usage of the market in a comprehensive manner; only through either number of customers or the number of visits to the website.

5.3.3 Causal Network Analysis

The Causal Network diagram (Appendix III) identifies a number of variables that influence business model success based on the output of the interviews conducted and the themes identified in Table 3:

- Electronic market concept (business model).
- Acceptance of technology.
- Buyer-seller relationship.
- Business model success.
- Market transparency.
- Web page design.
- Data (information) quality.
- Liquidity.
- Competitive intensity.
- Customer turbulence.
- Technological turbulence.

Appendix III helps us by identifying the issues, and provides some insight into causation. Appendix III is a Causal network for the variables identified during the course of the interviews. The arrows signify the directional relationship and strength of the relationship between the variables. The strength was determined by whether or not the relationship occurred in one or more of the cases analysed. The Causal Network was constructed using the method described by Miles & Huberman (1994, p228). There are several key insights that can be extracted from examination of the “causal streams” associated with the business model variable and the business model success variable:

The first insight relates to what is not present in the causal network diagram: None of the four cases mentioned measurement of performance as an important determinant of success. This might account for why the business performance measures did not reflect a balanced scorecard approach.

The causal streams that appear key are as follows:

- Electronic Market Concept --- Buyer-Seller Relationship --- Acceptance of Technology --- Business Model Success.
- Electronic Market Concept --- // --- Type of electronic market --- Market Transparency --- Reduced Margins.
- Web page design // Data quality --- Acceptance of Technology --- Business Model Success.
- Web page design --- Acceptance of Technology --- // --- Use of market (Liquidity) --- Business Model Success.
- Technical staff retention --- Product Quality --- // --- Business Model Success.

The first point of importance is that causal streams 1. and 2. infer that the very concept of electronic markets causes a transparency in the marketplace that, in turn, causes reduced margins. Second, that Acceptance of technology is influenced by Web page design and data quality. Thirdly, the relationship between product quality and technical staff retention.

6. Discussions and Conclusion

In conclusion, the results of the four case studies has revealed a number of key concepts and relationships: Four companies of different types were the subject of case studies:

- A. An Integrated Solutions Provider that operates and electronic market and offers consultancy and process – specific knowledge.
- B. A Purchasing portal, specialising in operating a horizontal electronic market and that focuses on transactions only.
- C. A Vertical industry aligned electronic market, specialising in transactions and knowledge concerning one industry only.
- D. A company whose business model has evolved from an electronic market to an ASP (Application Service Provider).

Analysis of the specific processes identified as defining the companies' characteristics revealed significant similarity only between companies B and C. Analysis of the case study interviews identified a number of common themes, including inferences that most of the companies saw the future to be adoption of an ASP business model, that the electronic market concept lead to downward pressures on margins and that technology acceptance by potential users was crucial to success.

Causal network analysis identified a number of variables that influenced business model success. This analysis identified several influential variables not previously identified in the research model posited in Figure 1. However, the variables had been identified by others in prior research: Web page design (Lederer et al. (2000); Zhang & Von Dran (2002)), data (information) quality (Lederer, 2000), market transparency (Bakos, 1997), Customer and technological turbulence (Slater & Narver, 1994), competitive intensity (Slater & Narver, 1994) and Buyer-seller relationship (Timmers (1999); Balos & Brynjolfsson (1993)). These were observed, through the interviews as being influencers of business model success.

Analysis of the business performance measures being used by the companies revealed that none of the companies were using a set of measures that were aligned with the balanced scorecard concept (Kaplan & Norton, 1992).

The causal network analysis infers that electronic markets increase market transparency and that this impacts business performance by reducing margins. Therefore, the inference must be that electronic markets can never be profitable business models. Further, several other variables impact business success: Acceptance of technology by potential users, the liquidity of the market, web page design, technical staff retention and data quality as described in 5.3.3. above. The results suggest that EMH (Malone et al., 1989) does not provide a true description of electronic market evolution; rather, that because the profitability of electronic markets is likely to be limited by their very nature, companies see profitable evolution being in an ASP business model and the provision of professional services (Consultancy and Training) rather than the personalised markets posited by Malone et al. (1989) in EMH.

The fact that electronic markets do not seem profitable or that they are not seen as being a sound basis for a business model is not totally surprising: Bakos (1997) studied the effects of search costs on electronic markets and concluded that the best way to maintain margins would be for the EM to control market transactions and access to customers. However, for independent EMs, this presents a dilemma because they need the buyers and sellers to establish liquidity in the market and thus generate revenue but because of this the major buyers and sellers have a high degree of leverage over what the EM charges – a case of the EM needing the buyers and sellers more than the buyers and sellers needing the EM. Therefore, the power lies with the buyers and sellers. The data collected from the interviews in this research indicated that pressures from both buyers and sellers tended to drive down the fees (and hence the margin) that EMs could command. To explain the findings, it is best to revisit the research questions and seek to answer them based on the data and analysis presented above:

6.1 Q1: How is the business performance of an electronic market influenced by the nature of the electronic market business model?

Looking at the four business models studied in this research and seeking to fit them into the evolutionary steps of EMH (Table 1 above) is not easy. For example, what is the real difference between a biased and an unbiased market? Malone et al. (1989) sought to differentiate on the basis that the technology would allow buyers access to all possible sellers; technologically, all of the business models studied here allow buyers access to all of the sellers registered within the electronic market. However, the number of sellers registered is only a small proportion of the total number of sellers available via other (i.e. non electronic) channels. Therefore, one might argue that these electronic markets are biased compared to the total market for the goods and services being offered. This is true for all of the four models studied.

None of the four companies intends evolving towards a “personalised market”, as predicted in EMH. Instead, they see the future in an ASP business model and in the provision of training and consultancy services. Two intend to retain an electronic market business model on the basis that they believe they have a degree of competitive advantage either through easy access to customers or through strength of

industry backing. Indeed, since embarking on this research, Company C has ceased trading.

All companies operate either a transaction-based fee structure or a commission-based fee structure. Bakos (1997) split the effects of electronic markets on pricing into commodity and differentiated products (Section 2.2 above). For the companies studied in this research (two commodity and two differentiated, by their view) the effect on pricing was always downward and thus their revenue and margins were squeezed to unsustainable levels; the arguments of the electronic markets' customers were simple:

For sellers, unless they had access to new markets or a much larger potential customer base, the market would only succeed in squeezing their margins. Therefore, the sellers wanted a lower pricing or commission tariff because in reality they were simply selling to their old customers via a different (lower priced) channel. For buyers, the only benefit of an electronic market would be if they got lower prices and that would only happen if there were lots of sellers in the market place. Sellers would, in turn, be attracted by large buyers in the market and therefore, the buyers should not have to pay at all to use the market. The arguments proposed by the electronic market customers do fit with the ideas posited by Bakos (1997), and could also fit with the ideas of bounded rationality and opportunism proposed in Transaction Cost Economics (Williamson, 1981) and identified as relevant to electronic markets (Lee and Clark (1996); Timmers (1999), p245-246).

With respect to the business models of the four companies studied in this research, in accordance with the classifications posited by Timmers (1999) they are:

1. Company A = Value-chain service provider.
2. Company B = E-Procurement.
3. Company C = E-Auction
4. Company D = Third party marketplace.

In conclusion, research question 1 can be answered by observing that the exact nature of the electronic market business model is not as important as the fact that the business model is *any* form of electronic market. The evidence collected during the course of this research suggests that if the business model is an electronic market seems to infer that sustainability will be an issue because revenues and margins will decrease over time. This observed fact I shall refer to as the “*electronic market paradox*”.

6.2 Q2: Do Turbulence and Competitive intensity within the business environment act as moderators on an electronic market’s business performance?

From the survey questions, three summarised points (from 5.3.2 above) were that there was high technological turbulence, moderate customer turbulence and moderate levels of competitive intensity in the markets operated in by the four companies studied (at this point in time).

On the other hand, there was a range of opinion concerning general market conditions: From “tough” to “buoyant”. The causal network analysis, however, identified three variables (Technological turbulence, customer turbulence and competitive intensity) as all having a direct influence on business model success. Therefore, it can be said that Technological turbulence, Customer turbulence and Competitive intensity are partially moderating variables, and customer turbulence influences competitive intensity. This view is consistent with the findings of Slater and Narver (1994).

6.3 Q3: Does acceptance of electronic market technology by potential customers of the electronic market moderate an electronic market’s business performance?

In all cases, acceptance of technology was perceived to be a key influence in the success of electronic market business models. Causal network analysis identified technology acceptance as a partial moderator. That is, having both a direct influence and an indirect influence via a variable identified as “Liquidity” (the number of buyers and sellers active in the electronic market at any one time) The influence of technology acceptance on the successful implementation of web-based technology has been confirmed in studies by Lederer (2000) and Lin & Lu (2000).

Further, causal network analysis indicated that web page design and data quality influenced the acceptance of technology, in addition to the buyer-seller relationship (Matthyssens & Van de Butle (1994); Bakos & Brynjolfsson (1993)). The importance of web page design to the successful adoption of a web-based system has been previously identified by Zhang & Von Dran (2002). Data / information quality has been identified as an important variable in the acceptance of web-based information systems by Lederer et al. (2000).

6.4 Overall Conclusion

Electronic market business models in general are subject to declining revenues and margins due to their very nature and seem unable to capitalise on differentiated markets or the benefits they bring buyers. This, I have referred to as the *Electronic Market Paradox*. Electronic market business performance is influenced by technological and customer turbulence, as well as competitive intensity. Acceptance of technology acts as an important partial moderator to business performance.

Causal network analysis identified several antecedent variables to business model success (including the retention of technical staff to ensure product quality standards) and, as a result, the model depicted in figure 2 below is proposed to describe the relationship between electronic market business model and business performance.

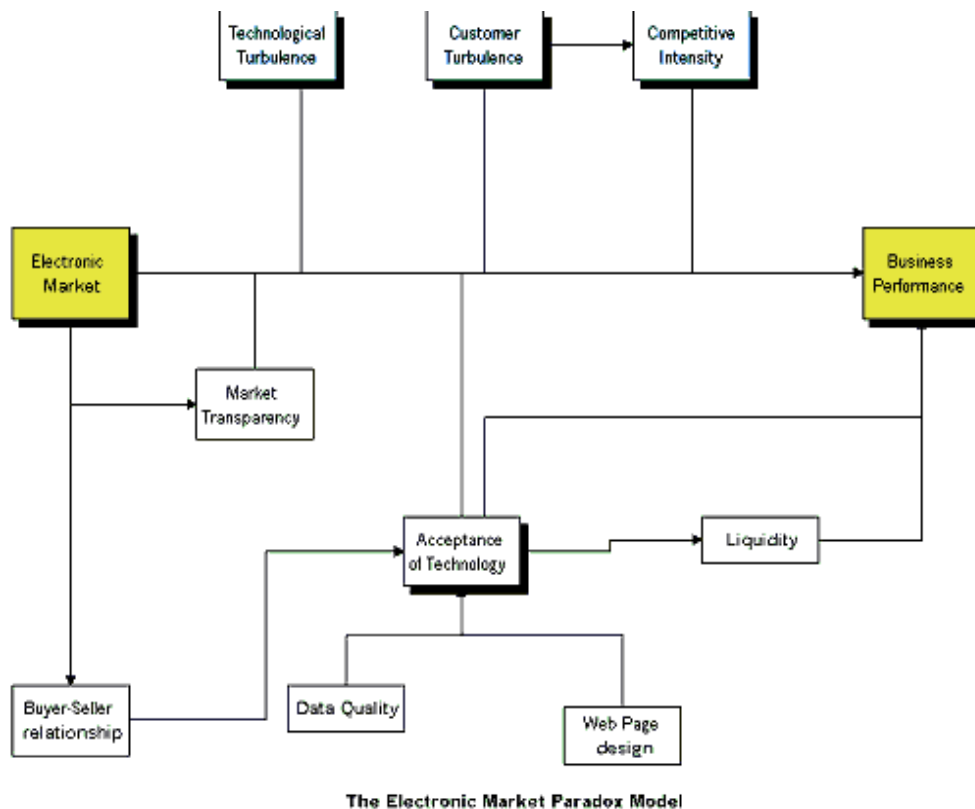


Figure 2

7. Limitations and further research

The research carried out for this paper has a number of limitations: The sample of electronic market businesses and business model types is limited and this may influence the outcome. The interviews were carried out with a limited number of personnel, all from within the companies. The structured interview format may also be a limitation, as the breadth of questions was limited to those only associated with this research and could be broadened. Data referring to market conditions was collected using survey questions: Obviously, this paper had a limited sample for the survey and one has to question the validity.

The qualitative methodology utilised in this work has limitations, as no financial performance measures were collected; further research could be carried out to verify the model presented in Figure 2 using a positivist methodology. Further work could examine a broader range of electronic markets, including non-UK organisations. The variable for technology acceptance could be studied in more detail to determine more precisely how it is constructed and what factors influence the acceptance of a

electronic market technology. The financial aspects of performance could be examined in detail as could the specific influence of the buyer-seller relationship.

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ABBREVIATIONS USED:

ASP – Application Service Provider

CEO – Chief Executive Officer

EMH – Electronic Market Hypothesis.

EM – Electronic Market

ISO – International Standards Organisation

ISO 9000 – International Standards Organisation framework for quality management systems.

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APPENDIX I: Structured interview schedule.

STRUCTURED INTERVIEWS: ELECTRONIC MARKET BUSINESS MODELS
AND BUSINESS PERFORMANCE

Jon Moon

GLOSSARY

Definitions used in this research:

1. **Electronic Market:** An Electronic Market can be described as a marketplace of buyers and sellers brought together in the market by an information system that crosses organisational barriers (Bakos 1997)
2. **Process Map:** A diagram that documents, in sequence, the steps that departments go through to convert inputs to outputs for a specific process. (Rummler & Brache, 1991)
3. **Process Step:** A single activity box in the process map.
4. **Business Model:** The goods and / or services a company offers to its customers; the means by which that company generates revenue and creates economic value (the difference between price and cost)). Porter, 2001.
5. **User Acceptance:** The willingness of customers to use internet technology.
6. **Balanced scorecard:** A means of encompassing a wide variety of relevant performance measures.
7. **Performance Measure:** How a business measures its success and how others measure that business' success.

SECTION 1: BUSINESS MODEL

Objective:

Define the Business Model and validate process model.

Questions:

- i. Open discussion with the nature of the subject company's business objectives and a descriptive of the business model (revenue model and particularly in terms of value added product / services to customers)
- ii. Using a pre-prepared Process Map, discuss the following aspects:
 - How accurate is the map and what changes need to be made?

- Which process steps differentiate the subject company from its competitors?
- What are the main activities within these?
- How would the subject company describe itself in one sentence?
- Does a Process Map adequately represent the business model?
- What are the particular challenges this business faces in terms of meeting its customers' demands?
- Does the subject company believe that its current business model and processes will change significantly in the next 1-2 years?
- If so, how?

SECTION 2: MARKET CONDITIONS

Objective:

Obtain perception of competitive environment.

Questions:

- i. Using the questionnaire developed for procurement professionals, ask the questions relating to Market Turbulence and Competitive Intensity (Section C).
- ii. Discuss the nature of competition in the subject company's market and solicit their view concerning the competitive environment over the next 1-2 years (eg, main drivers and changes).

SECTION 3: USER ACCEPTANCE

Objective:

Understand perception of Customer / user acceptance of the technology / service.

Questions:

- i. Ask if any work has been conducted to collect feedback from users on the Website and service offered.

- ii. Ask if work been conducted to find out why potential Customers might not be using the website.
- iii. If any work has been carried out, explore the nature of it.
- iv. Explore the nature and results of customer feedback received about the website, its performance and quality.

SECTION 4: BUSINESS PERFORMANCE

Objective

Identify the key business performance measures used, to understand why the company has chosen them and obtain measurements made YTD.

Questions:

- i. Identify the groups of performance measures that the subject company measures: For example, plot against the categories identified in the Balanced Scorecard: Customer Satisfaction, Non-Financials, Learning & Innovation and Finance.
- ii. Identify the specific performance measures that are used within each category.
- iii. Ask why these specific measures were chosen and discuss the aspects of the business model they impact on.
- iv. Ask about targets and if they have been set for none/some/all of the measures.
- v. What are the targets?
- vi. What is the performance against these targets (or in absolute terms) to date?
- vii. Discuss views on whether or not the performance measures used are the most appropriate / cover all relevant areas / are reviewed on a regular basis for suitability.

Administer the following questions on two specific aspects of performance:

- a. Sales Revenue
- b. Return on Sales (Operating profit / Turnover)
- c. Profit before tax (PBIT)
- d. Return on Value Added = $(\text{Sales} - \text{Cost of Sales}) / \text{Sales}$. Mendelson, 2000
- e. ROCE (Return on Capital employed) = $\text{PBIT} / \text{Total Capital employed}$
- f. Compound Annual Growth Rate of Sales.

END INTERVIEW

Seek permission to come back to clarify any points.

Clarify deliverables.

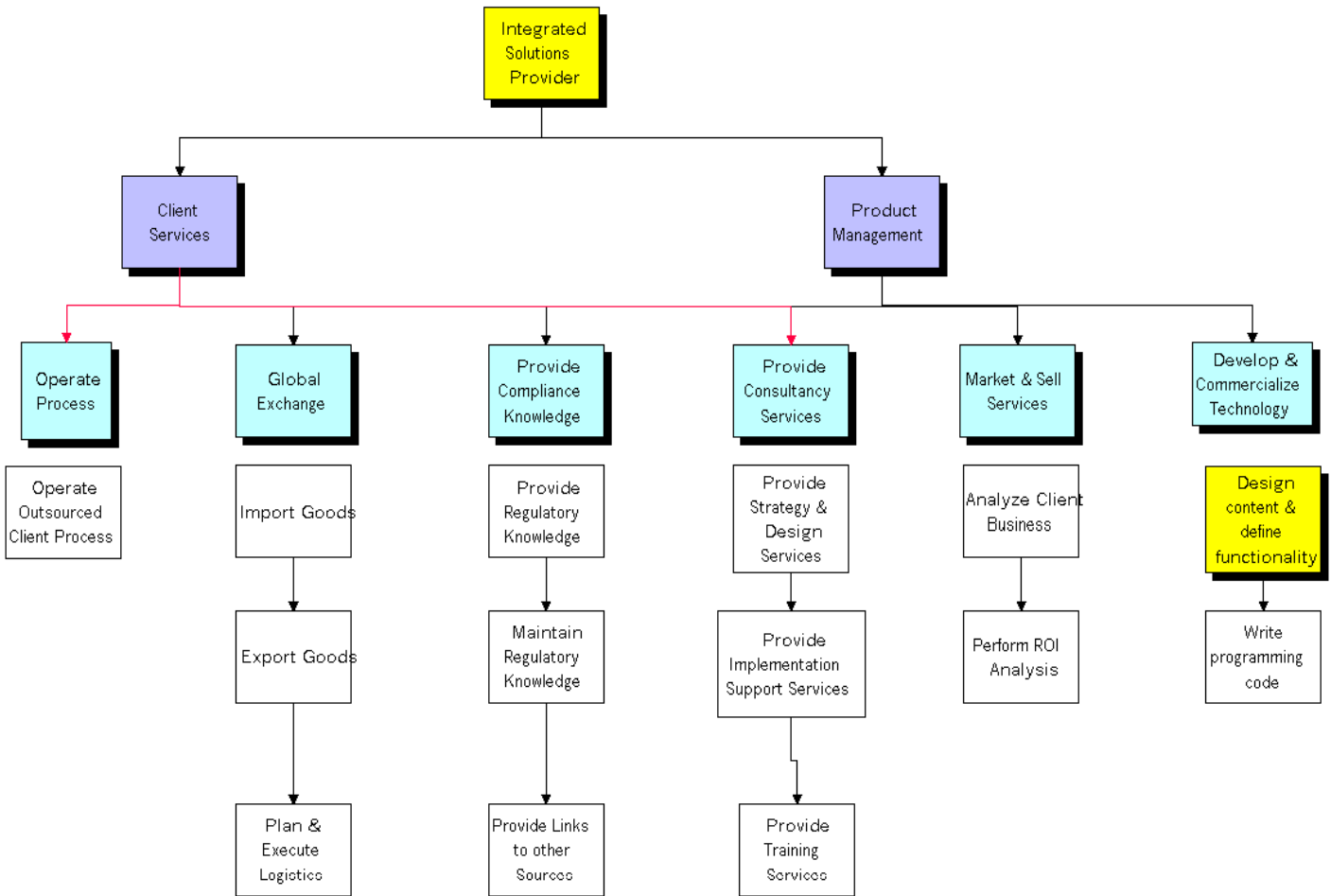
Thank interviewee for their time.

ADMINISTRATION:

1. Media: Cassette Tape, transcribed to Word 2000.
2. Manual notes, transcribed to Word 2000.

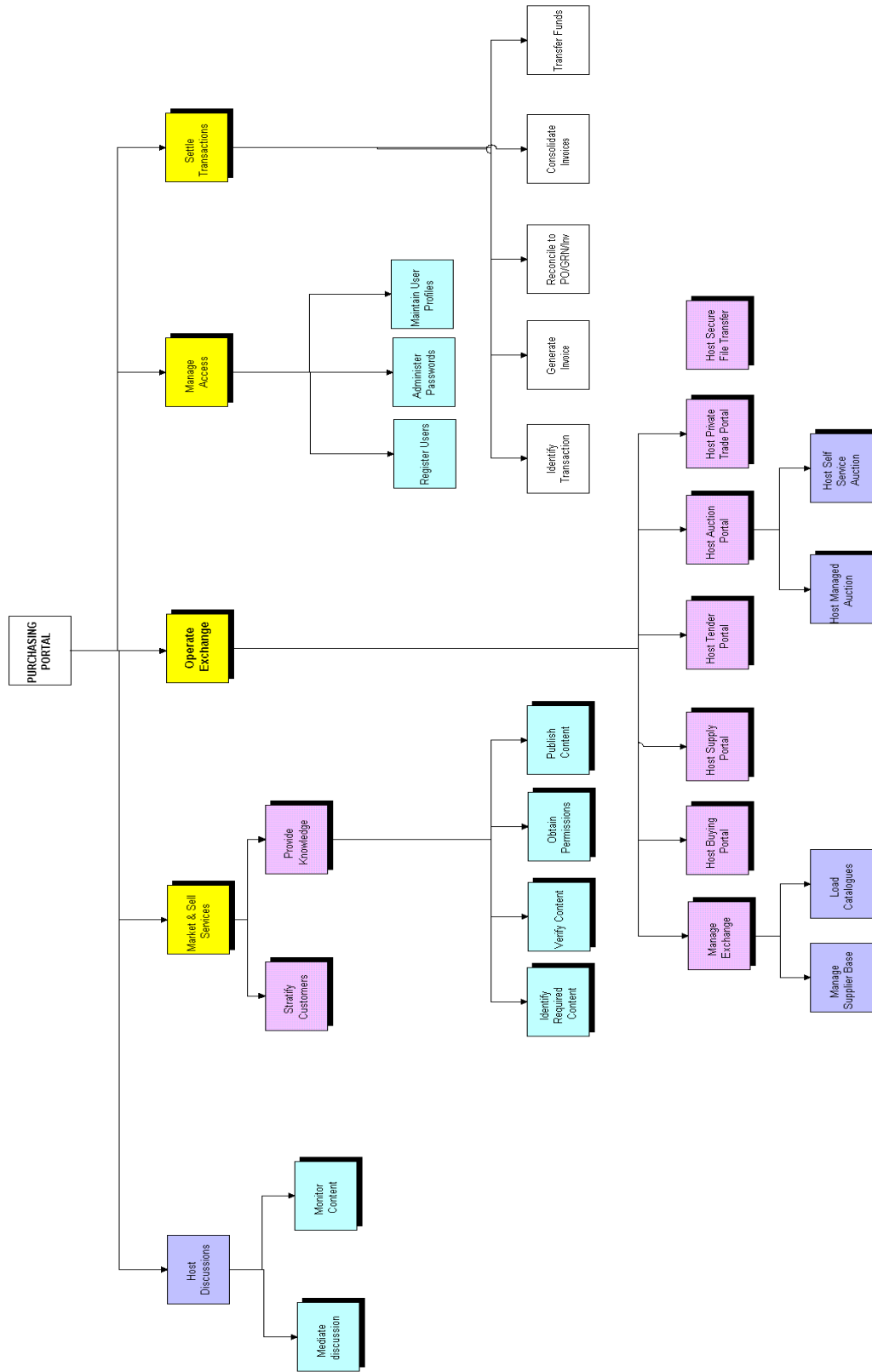
APPENDIX II

INTEGRATED SOLUTIONS PROVIDER MODEL



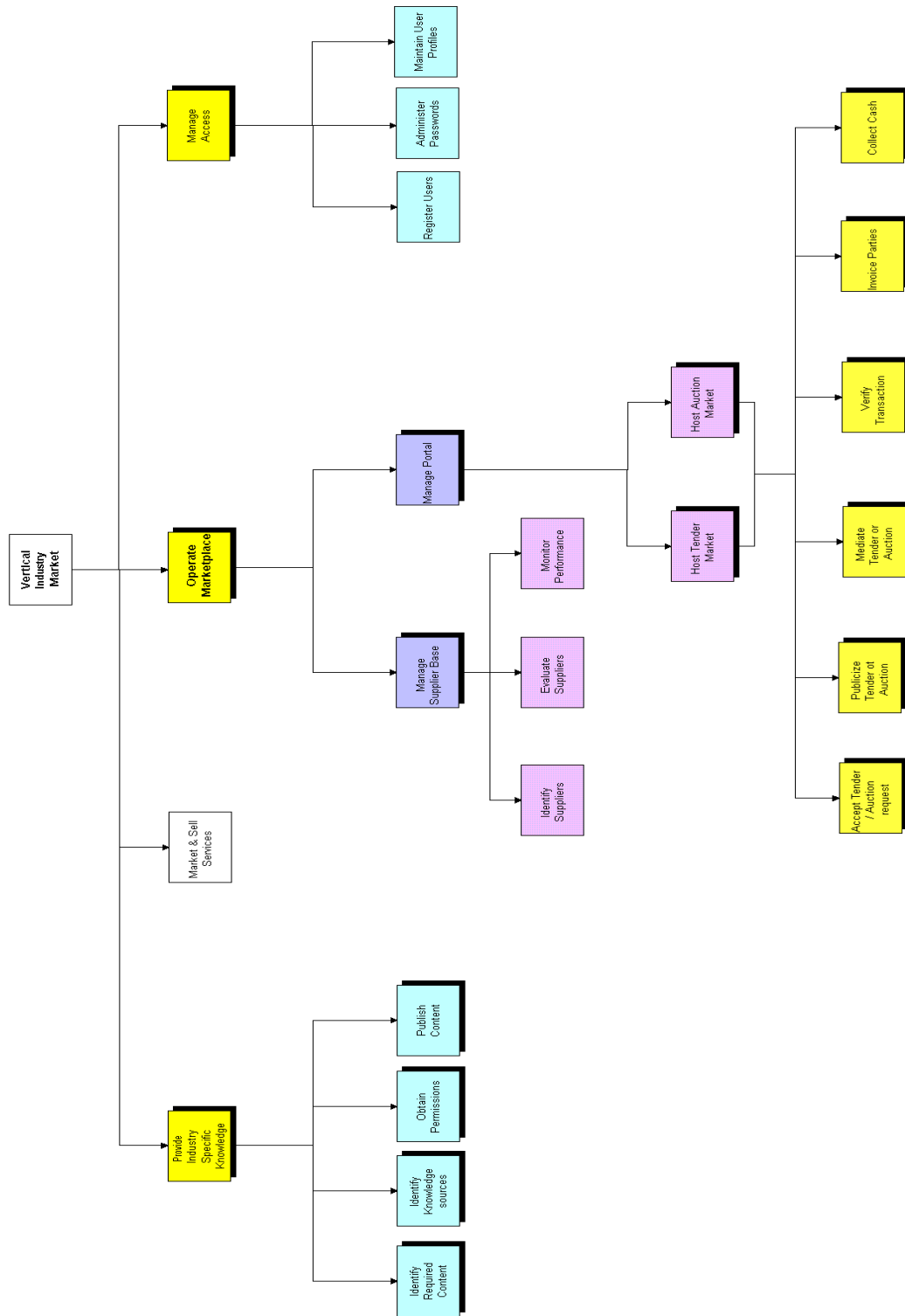
Process Model for Company A, “Integrated Solutions Provider”

PURCHASING PORTAL MODEL



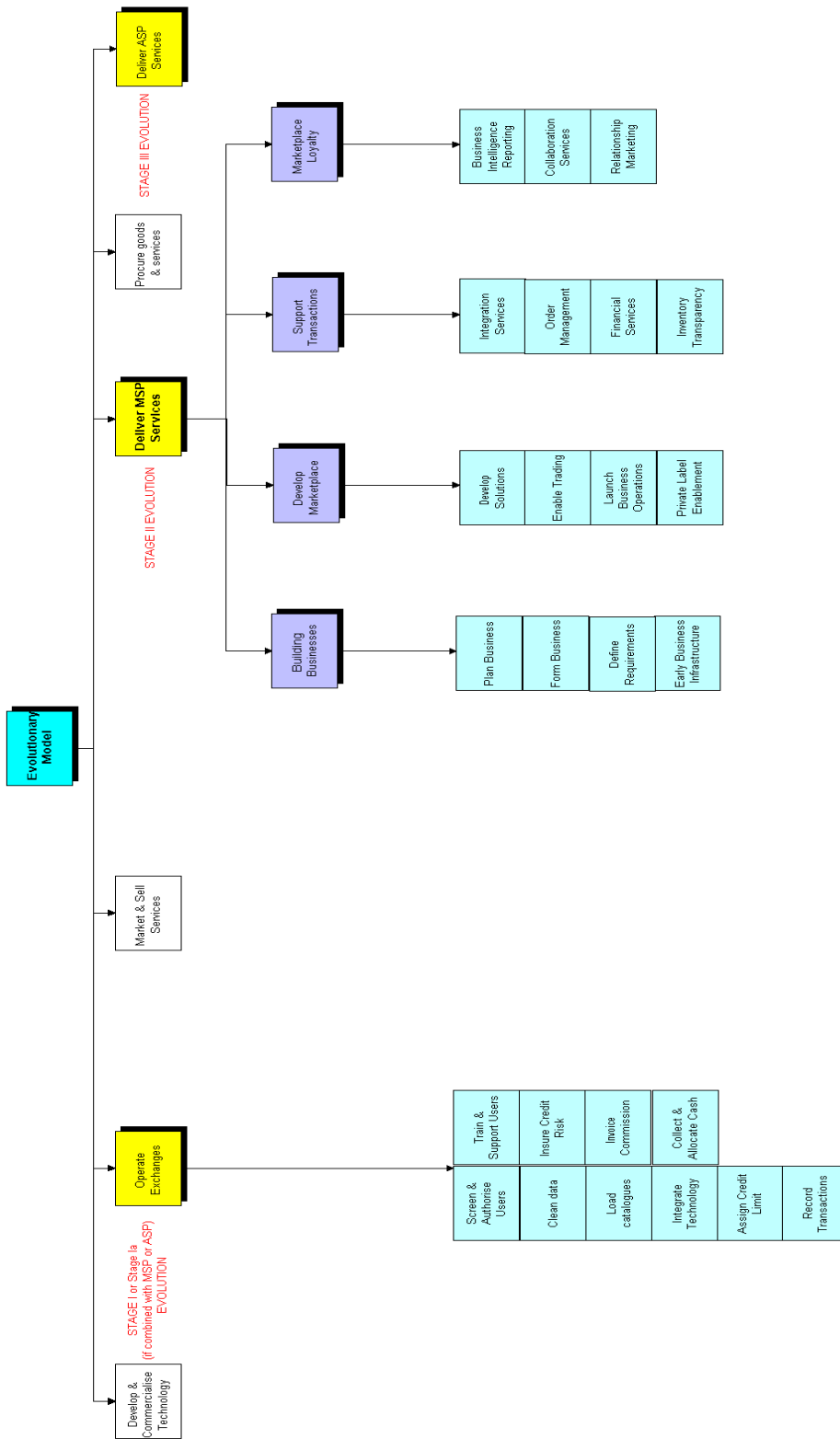
Process Model for Company B, Purchasing Portal

VERTICAL INDUSTRY MARKET MODEL



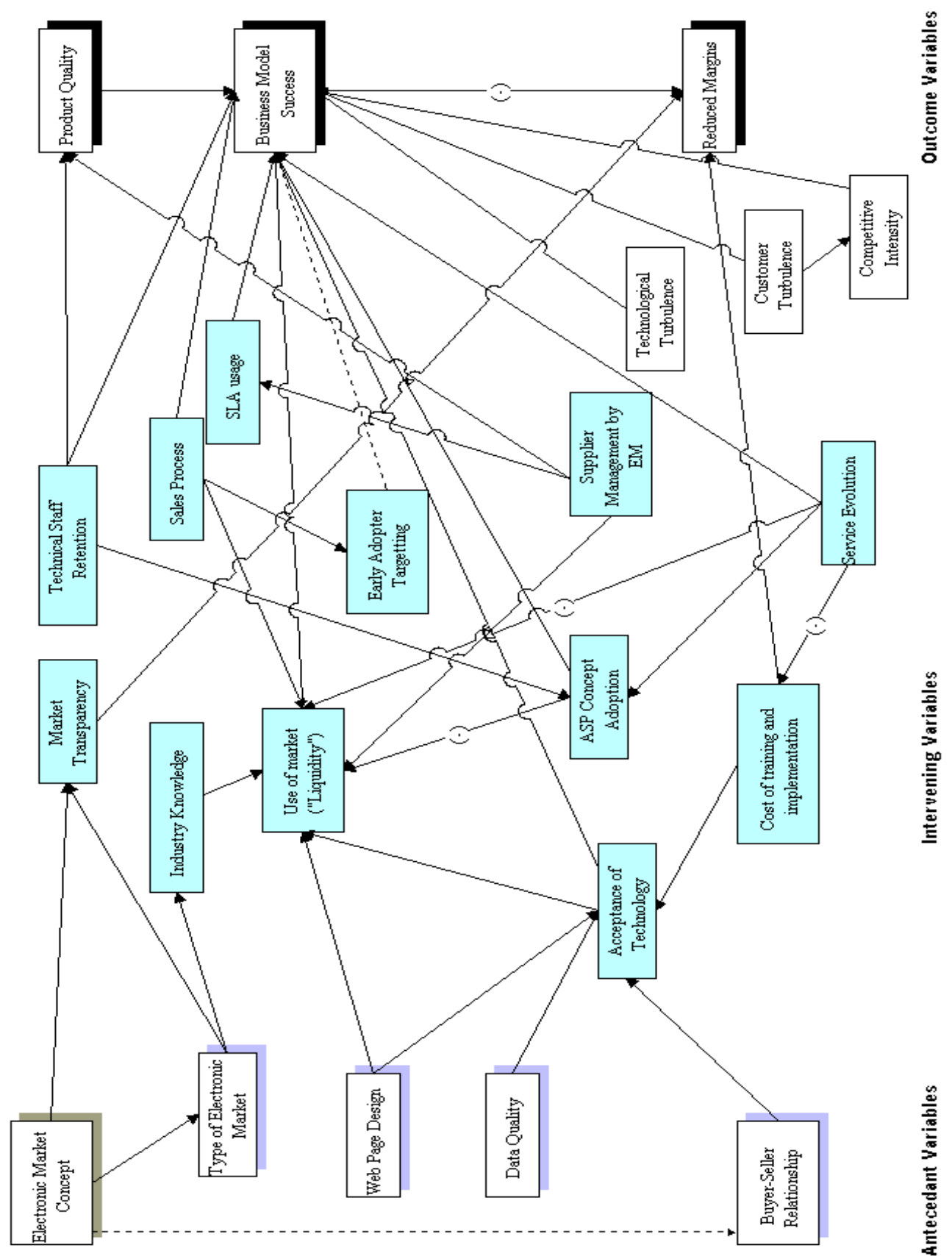
Process Model of Company C, Vertical Industry Portal

EVOLUTIONARY MODEL



Process Model for Company D, Evolutionary Model

APPENDIX III: Causal Network Analysis



APPENDIX IV

Variable	Question	Mean (all Companies)	Range of scores	Scale
MT1	The technology in my industry is changing rapidly.	6.5	4 – 8	1-9
MT2	Technological changes provide big opportunities in my industry.	6.0	2 – 8	1-9
MT3	It is very difficult to forecast where the technology in my industry will be in the next 2-3 years.	5.3	4 – 7	1-9
MT4	A large number of product ideas have been made possible through technological breakthrough in my industry.	7.8	6 – 9	1-9
MT5	Research and development activity has increased in my industry this year.	3.3	1 - 6	1-9
MT6	In my market, customers' product/service preferences change quite a bit each year.	6.3	4 – 8	1-9
MT7	Target marketing in my industry is like trying to hit a moving target.	3.0	2 – 4	1-9
MT8	My customers tend to look for new product/service lines all the time.	5.5	4 – 7	1-9
CIN1	Competition in our industry is cut-throat.	2.3	2 – 3	1-5
CIN2	There are many promotion wars in our industry.	3.0	3 – 4	1-5
CIN3	Anything that one competitor can offer others can match readily.	3.5	2 – 4	1-5
CIN4	Price competition is the Hallmark of our industry.	2.0	2	1-5
CIN5	One hears of a new competitive move almost every day.	2.3	2 – 3	1-5
CIN6	Our competitors are relatively weak.	3.3	1 - 4	1-5

Scores for survey question responses

APPENDIX V: Performance Measures used

Balanced Scorecard Category	Variable Measured	Company			
		A	B	C	D
<i>Customer Satisfaction</i>	Surveys	X			
	Interviews	X			
	Focus groups	X			
	System up-time		X		
	Speed of response		X		X
	Number of customers		X		
	Usage by customers		X		X
	Number of visits to website				X
	Number of pages viewed				X
	Returns				X
<i>Internal business processes</i>	Implementation progress at customer	X			
	Employee scorecards	X			
	Employee Turnover		X		
	Supplier service levels	X	X		
	Number of buyers and sellers			X	
<i>Innovation & learning</i>					
<i>Financial performance</i>	Revenue	X	X	X	X
	Contracts sold	X		X	
	Sales pipeline	X	X		
	Margin	X	X	X	
	Cashflow	X			
	Debtor days	X			
	Creditor days	X			
	Operational costs		X		
	Transaction value			X	X
	Prices as % starting price			X	
	Credit risk				X

Business Performance Measures