THE INTERNET, A CREATOR OF ELECTRONIC MARKETS FOR AIRLINE TICKETS?

William Golden
(Corresponding Author)
Department of Accountancy and Finance, National University of Ireland, Galway
Tel +353 (0)91 512002 Fax +353 (0)91 750565
willie.golden@nuigalway.ie

Eoin Higgins
Centre for Innovation and Structural Change, National University of Ireland, Galway
Tel +353 (0)91 512413 Fax +353(0)91 750565
eoin.higgins@nuigalway.ie

Martin Hughes
Department of Accountancy and Finance, National University of Ireland, Galway
Tel +353 (0)91 512617 Fax +353(0)91 750565
martin.Hughes@nuigalway.ie

Susan Flynn
Department of Accountancy and Finance, National University of Ireland, Galway
Tel +353 (0)91 750301 Fax +353 (0)91 750565

ABSTRACT
In 1987 Malone, Yates, and Benjamin proposed that the use of information technology would alter market structures, the result of which would be more use being made of electronic markets. One of the primary examples given to support this theory in the paper is the airline industry – and in particular the advent of computer-based airline reservation systems. There is a need to re-evaluate this theory in the light of the changes that have occurred in the airline industry due to the advent of the Internet. This paper investigates how the Internet has altered the business strategies of both Ryanair and Aer Lingus. In particular, it investigates, the extent to which there is a move away from electronic markets in the form of computerised reservation systems to a sole supplier booking interface via individual company web sites. On the basis of this investigation the theory proposed by Malone et al. (Malone et al. 1987) is reassessed. The influence of information technology in facilitating a move to electronic markets is not supported. In fact the opposite is found – the Internet facilitates a move back to electronic hierarchies.

1. INTRODUCTION

The co-ordination of production systems has been organised into hierarchical structures since the Industrial Age. Whenever the "make or buy" question arose, efficiency usually prompted the firm to "make", and keep every element of production within the firm's boundaries. To buy was to surrender control of production to the efficiency of the market, a potentially undesirable situation. The evolution of technology that has occurred during the current "Information Age" is challenging that traditional business dogma. Communications technologies have exposed inefficiencies in the hierarchical production model and have also made electronic market co-ordination within production systems significantly more efficient than traditional market co-ordination. Being aware of these advances Malone, Yates and Benjamin (Malone et al. 1987), proposed that information technology will serve to enhance the efficiency of co-ordinating market structures, increasing production efficiency, and providing direct benefits for the consumer in the form of lower prices that arise from the savings made due to decreasing transaction and co-ordination costs. To take advantage of these increased efficiencies, markets will need to realign. Malone, Yates and Benjamin (Malone et al. 1987), believe that this realignment will take place over a number of transitional stages, evolving from electronic hierarchies to personalised electronic markets. Also, they suggest that a noticeable consequence of such realignment would be the displacement, or disintermediation, of those providing intermediary functions in the markets (Malone et al. 1987).

Since publication of the EMH information technology has continued to evolve, and e-commerce now provides many examples of electronic markets in operation. In particular, the airline industry has attempted to utilise technology in order to cut cost and create profit, and within this industry there is ample evidence of the effects of technology implementations on the production system. With this in mind, it would appear to be an opportune moment to re-examine Malone, Yates and Benjamin's (Malone et al. 1987) proposals, within the context of the airline industry, in order to determine their validity.

To accomplish this, the paper begins with an examination of the literature related to the Electronic Market Hypotheses (EMH). The starting point for this is a brief discussion of transaction cost economics - the foundation upon which the EMH is formed. The paper then examines existing literature that has investigated the impact of IT on the airline industry in terms of its impact on market structures. Two case study airlines are then outlined. The impact that the Internet has had on these airlines is discussed; particular attention is given to the impact of the Internet on the market structures used by these airlines. Evidence is presented which indicates that there is a move towards electronic hierarchies and away from electronic markets. A consequence of this shift is a decreasing role for intermediaries, such as travel agents, in the airline travel industry

2. THEORETICAL BACKGROUND

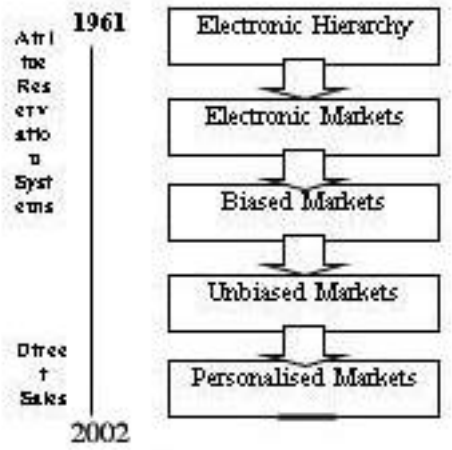
2.1 EMH, Transaction and Co-Ordination Costs

Transaction cost economics, first proposed by Coase (Coase 1937) and later expanded upon by Williamson (Williamson 1975; Williamson 1979) has long been used to explain why markets (or hierarchies) emerge. Transaction cost theory suggests that due to the higher costs associated with market transactions hierarchies (or in-house production) are often preferred over markets as an economic governance mechanism. Malone, Yates, and Benjamin's (Malone et al. 1989) Electronic Market Hypothesis (EMH) predicted a transition from electronic hierarchies to markets. One of the primary economic reasons cited for the proliferation of electronic markets is the associated reduction in transaction costs (Malone et al. 1987). Malone, Yeats and Benjamin (Malone et al. 1989) believed that as transaction costs fall, overall market activity will increase, providing an opportunity to move away from traditional sales channels toward electronic markets. Lee and Clark (Lee and Clark 1996)

agree that the reduction in transaction costs is one of the main economic reasons for the rapid growth in electronic markets.

Malone, Yates and Benjamin (Malone et al. 1987) also predicted that information technology would decrease the unit costs of co-ordination, and as a result would increase the proportion of economic activity co-ordinated by electronic markets. As the capabilities of IT continue to develop, market structures have evolved as depicted in figure 1.

FIGURE 1 EVOLVING GOVERNANCE MECHANISMS



Airline reservation systems represent a leading exemplar of a product that has provided a clear path toward electronic markets. As required by the EMH, IT reduced the time and effort required by consumers to purchase tickets. Originally, airline tickets were sold through a simple transaction either by airline direct services or through travel agents, which were adequately compensated by the airline for their services. Two main systems, SABRE and APPOLO, owned by the leading air carriers, dominated the market. The United Airlines system, APPOLO, was established as an electronic hierarchy. The introduction of the American Airlines system, SABRE, shifted the industry to a biased market structure. Regulatory intervention eliminated most of this bias and an unbiased electronic market ensued. The advent of customer tracking technology eventually provided the ability to move the industry to a personalised market structure as hypothesised by Malone et al. (Malone et al. 1987).

Copeland and McKenney (Copeland and McKenney 1988) have traced the evolution of airline reservation systems from their development as a bid to reduce clerical costs to their classification as essential assets of each industry player. They believe that the behaviour of individual carriers had a significant impact on their respective fortunes and attribute the advantages enjoyed, by both American Airlines and United Airlines to four specific factors: scale economies, cumulative technological experience, management outlook and learning by doing.

Also, industry participants have found that technological innovations, such as online sales, dramatically reduce transaction costs (Berger, 1998). Travel lends itself well to online distribution and offers a number of advantages to the retailer beyond possible reductions in travel agents commissions. These advantages include significant savings on distribution costs through the introduction of ticket-less sales and the fact that travel retailers have an important advantage over other online retailers in that they do not have to concern themselves with the logistics of delivery (Mattimoe 2000). Ticketless travel was developed in conjunction with direct sales. This idea is based on an electronic flight ticket concept, which allows for smoother procedures at check-in. Once the flight has been booked online

the customer is sent an itinerary and receipt email, with no conventional paper ticket being issued. This email includes reference number, receipt and check-in information, with details of the flight being stored on the carrier's database. The customer simply presents this reference number at the check-in desk upon travelling(Smith 2002). Ticketless travel allows transaction to be completed in real time and has a positive impact on airline expenses, reducing paper-handling costs (Mattimoe 2000).

Daniel and Klimis (Daniel and Klimis 1999) inspected the EMH with regard to the widespread use of IT and corresponding technological advances that have taken place since the EMH was published. They examined the banking and music industries to test the hypothesis current validity. As predicted by the EMH, they found a number of biased markets in the financial services sector.

2.2 Intermediation

Malone, Yates and Benjamin (Malone et al. 1987) also proposed that the advent of electronic markets would likely displace the traditional intermediary in the value chain. Although many observers are in agreement that the traditional role of intermediary is likely to change, many see new roles emerging in their place (Bailey and Bakos 1997). Tapscott (Tapscott 1996) supports Malone, Yates and Benjamin's proposal arguing that those intermediaries operating in network environments, who only process transactions, without adding any real value, are most susceptible to disintermediation. Choudhury, Hartzel and Konsynski (Choudhury et al. 1998) also predict that electronic markets will reduce the extent of brokerage usage by buyers. The main reason cited for this reduction is the electronic brokerage effect (Malone et al. 1987). The electronic brokerage effect simply means that electronic markets have the potential to fulfil the same role as the traditional broker by electronically connecting buyers and suppliers. Similarly, Strader and Shaw (Strader and Shaw 1997) recognise that electronic markets are more useful when they bypass the need for a broker and match directly buyers and sellers. Although they moderate this statement, adding that electronic markets can also increase buyer demand, thus creating new roles for intermediaries.

Berghel (Berghel 2000) also supports disintermediation. His paper describes two types: symbiotic disintermediation, where the disintermediator adds value to transactions by connecting suppliers with customers beyond their reach, while providing customers with the products they require. The other type is predatory disintermediation, e.g. airlines where own website provides discounts unavailable on intermediary sites.

Air travel is essentially a commodity product. Low costs are considered to be the main competitive advantage in the industry (Furlong 2001). Substantial cost savings can be derived from online distribution. Call centre costs are traditionally up to four times less expensive than travel agent costs and online sales are almost half that again (Byrne 2001). The travel agency channel contributes costs totalling approximately 13% of the total fare, when broken down:

- 7.5% is attributable to agency commissions.
- 4.5% to central reservation system charges.
- The remaining 1% to the host reservation system.

By bypassing the travel agent 12% of this cost is eliminated immediately.

3. RESEARCH METHODOLOGY

Given the vast amount of current information and evidence on electronic market systems, as well as the nature of the research problem, an appropriate research strategy for gathering information is in-depth studies of individual electronic markets, rather than a broad-based survey.

Given the exploratory nature of the research, a single-industry evaluative case study approach was taken, as it was felt that in order to appreciate the phenomenon in question it was necessary to focus

on an individual industry segment. The industry chosen for this purpose was that of airline aviation, mainly due to it's early adoption of information technology in general and electronic commerce in particular.

A number of criteria were developed for inclusion in the study population. The company had to be an airline operating in the Irish airline industry (for convenience sampling), and they must have an e-business strategy in operation (or be in the process of adopting one).

Given the above criteria and the decision to focus exclusively on the Irish airline industry two companies were chosen as the basis of an industry specific case study:

Company	Irish Owned	Evolutionary IT Strategy	E-Commerce Strategy
Ryanair	√	√	√
Aer Lingus	√	√	√

Table 1.

The investigation was conducted on the basis of secondary data gathered from a wide variety of sources. The secondary data formed the basis for comparative research with new data being compared with existing data to identify trends and deficiencies. Secondary data sources include:
Recorded data and records generated by the organisation as part of its operations, for example, company accounts.
Business information sources.
Academic literature.
Government information and reports.

This research has made extensive use of Business Travel News and Skytrax, two leading publications that extensively cover all company announcements, industry information and analyses. On-line searches were conducted using Factfinder, Lexis-Nexis, and Hoover databases. Stockbroker reports and analyses and company press releases on the companies web sites, news groups, on-line publications, relevant trade journals and newspapers, were all used to build the analysis that follows.

4. CASE STUDIES

4.1 Ryanair

With the development of their website (Ryanair.com) Ryanair economised on costs by launching a new host reservation system. This new system results in a cost reduction of 66% on the previous system, a total of 0.66% of the fare (Mattimoe 2000). Ryanair claim to be the only airline passing on those economies to the consumer, and give a guarantee that any fare booked through their web site will be cheaper than that found through any other airline or travel agent (Kennedy 2001).

Ryanair now take over ninety percent of their bookings directly through the website and through a call centre, with travel agency bookings accounting for a mere eight percent of sales. Launched in 2000, within three months the website was taking over fifty thousand bookings per week. The company offered its lowest possible airfares through their site, with fares from as little as £1 return on some of its routes. Within twelve months Ryanair.com contributed to over sixty-five percent of the company's total bookings and a sixty-six percent decline in marketing costs.

Online sales are subject to the initial nervousness of consumers. However Ryanair found that once customers migrate to online sales channels they usually stay there. Those consumers who have fears about the reliability of Internet sales use the call centre to confirm the booking. The company hopes

that this will change as consumer confidence grows, further encouraging the impulse buyer (Sawyer 2000). With this in mind, Ryanair encouraged more passengers to buy tickets over the internet by restricting telephone bookings to last-minute sales, and, during the websites opening phase, offering consumers a £5 discount on round trip flights booked through the website (News 2000). Ryanair view air travel as becoming a commodity purchase, increasing the budget traveller population and expanding Ryanair's target market (Smith 2002). Offline, Ryanair has broadened its distribution strategy by joining Sabre. The intent is to help expand its presence in the United Kingdom, and across continental Europe.

4.2 Aer Lingus

In 2000 Aer Lingus implemented a major strategy designed to reduce the cost of distributing their services to both the travel trade and the retail consumer and to improve the quality of accessibility to their products. There are a number of aspects to this strategy including: the overhaul of the telesales operation; the restructuring of the commissions system with the travel trade, to ensure it is more cost efficient and provides an incentive for the trade to grow their business; and the introduction of an online booking engine to improve access for customers and to increase the customer base (Aer Lingus 2000). The reduction in travel agent commissions began in 2001, with the airline slashing commissions from nine to five percent.

Aer Lingus unveiled its new interactive website in 2001. Although this launch came some considerable time behind many other leading airline carriers the company believes that this delay was necessary to ensure the site enveloped the Aer Lingus ethos of value added, above and beyond that of the point-to-point carriers (Byrne 2000). Management within the airline chose to wait until they had a website capable of handling everything from leisure travel to complex international business class itineraries before releasing it (Byrne 2000). To further ensure customer satisfaction AerLingus.com was given a three-month period whereby no changes were made to the site to allow customer feedback. The resulting feedback called for shorter, sharper pages (O'Neill 2001). Aer Lingus strategy helps to differentiate themselves from their no-frills competitors and justify the price differentials within the industry, claiming that they offer more for their prices (O'Neill 2001). That the site is more feature-rich reflects Aer Lingus position as a full service carrier.

The unveiling of the interactive website allowed online booking using either price or preference schedule. Features included in the first stage of online booking are (Byrne 2001):

- Online booking of all Aer Lingus flights.
- Online booking of connecting flights in ninety US cities.
- TAB Frequent Flyer Programme registration.
- Access to frequent flyer points online.
- Online booking of connecting flights within Europe where Aer Lingus codeshare arrangements exist.

New online fares were offered which they daimed were the cheapest available from the company, offering savings of up to fifty-one percent on last years lowest rates (BizPlus 2001). The company committed itself to providing 2.5 million low fare seats during 2002. Such promotions are part of the carriers aim to generate up to sixty percent of its sales online by 2004 or 2005 (Reuters 2001).

AerLingus.com allows customers to interface with members of the Oneworld alliance. The alliance eventually aims to create an Internet-based 'world airport'. This would allow customers to log on to the website 'worldairports.com' to organise their travel. The alliance will include London Heathrow, Gatwick, and Stanstead airports in the UK, Charles de Gaulle, Orly, and Copenhagen in Europe, several airports across the United States, Melbourne in Australia, and Japan's Tokyo Narita (Reuters, 2000).

5. DISCUSSION

The EMH was derived on the basis of the airline industry, as it is one of the primary examples of the development of electronic markets, developing in parallel with the evolution in IT. However, the case study finds that direct sales through individual airline carriers' web sites are shifting the industry back to a hierarchical structure.

Traditionally the EMH assumes that hierarchies have inherent switching costs, thus increasing costs experienced by consumers. However, the advent of the Internet, since the publication of the EMH, allows for the introduction of electronic hierarchies without producing switching costs for consumers. The prediction that electronic hierarchies entail higher prices for consumers (Bakos 1991) is not supported in the case studies and indeed is overturned. Ryanair claim to pass savings on to the consumer and give a guarantee that any fare booked through Ryanair.com will be cheaper than that found through any other airline or travel agent. Thus, the existence of a predetermined path from hierarchy to electronic market due to IT as posited by the EMH needs to be questioned in the light of this new technology.

Malone et al's (Malone et al. 1987) prediction that consumer needs would be the large scale driving force behind the movement toward electronic markets appears inconsistent with the fact that the industry is now moving towards a hierarchical structure. Bakos (Bakos 1991) posits that electronic markets usually favour the buyer by lowering buyers search costs, thus reducing seller's market power. Consequently much of the evolution toward electronic markets is caused by consumer power. Buyers have the ability to organise this strength in business-to-business markets. In consumer markets, where sellers are highly concentrated, suppliers may possess the capability to halt the development of such markets.

Malone, Yates, and Benjamin (Malone et al. 1987) first proposed that the use of information technology would cause fundamental changes in market structure threatening the existence of traditional intermediaries. Strong support is found for this prediction in the airline industry. The advent of direct sales via the Internet is reducing the number of buyers using intermediary channels, with travel agency booking now accounting for a mere eight percent of Ryanair's sales. There is a trend within the industry by the leading airline carries to reduce travel agent commissions, from nine to five percent in many cases.

Berghel (Berghel 2000) proposed that airline reservation systems cause predatory disintermediation, in that the playing field is tilted away from travel agents and toward the airlines own product. Both Ryanair.com and AerLingus.com provide fares and perks exclusive to their online customers. The five pounds price differential implemented by Ryanair is exclusive to their online customers, as are the low fares offered by both carriers reinforcing Berghel's theory.

An increased acceptance of ticket-less travel on the part of consumers will strengthen the competitive position of airline direct services against traditional agents. The principal function of the traditional agent remains delivering the final paper ticket to the consumer. Increased acceptance of paperless tickets reduces traveller dependence on traditional agents. Currently all tickets sold through Ryanair.com are electronic. With over ninety percent of sales being made by Ryanair through direct channels and the introduction of paperless tickets by Aer Lingus, it appears that consumer confidence in ticketless travel is growing.

Tapscott (Tapscott 1996) proposes that travel agents that only process information, without adding any real value, will be most susceptible to disintermediation. Agents need to adapt their business model. The growth in direct services is increasing travel agents reliance on the value-added aspects and may

provide an opportunity for reintermediation. Based upon Yin and Robey's (Yin 1984) consumer choice theory agents should look beyond selling physical goods and services to providing comprehensive product and service information, sales assistance, and valuing customer feedback post sale.

According to Malone, Yates and Benjamin (Malone et al. 1987) "A dramatic example of the shift toward electronic markets has already occurred in the airline industry. When airline reservations are made by a customer calling the airline directly….., the selling process is coordinated by the hierarchical relationship between the sales department and the rest of the firm. When airline reservations are made through a travel agent, the sale is made…..by the travel agent acting as an external selling agent for the airline. In this case, the selling process is coordinated by the market relationship between the travel agent and the airline". However, the fact that this position is now reversed, with airlines taking the majority of their bookings through their own websites, indicates that the transitions within the EMH have not continued to occur as proposed and that the position of electronic hierarchies has been reinforced.

6. CONCLUSION

In this paper, we have examined the accuracy of the proposals put forward in Malone, Yates and Benjamin's Electronic Market Hypothesis (Malone et al. 1987). The EMH proposed a multi-stage evolution in market structure from electronic hierarchy to personalized markets based upon successively lower transaction costs at each stage of evolution. It also proposed that the roles of traditional intermediaries would disappear with the increasing adoption of electronic markets.

The paper compared both these proposals with evidence gathered from a single industry dual case analysis of the Irish airline industry. This case study took as subjects, both Ryanair and Aer Lingus. Having examined the effects of information technology on both firm's business strategies and operational procedures little evidence was found to support the evolution of markets as proposed in the EMH. Admittedly, there was some historical evidence of the evolutionary stages mentioned, but both case studies clearly showed that the application of information technology – in particular the Internet - has not resulted in any kind of electronic market, rather instead a more efficient and effective electronic hierarchy has emerged.

With respect to the proposal in intermediation, we found clear evidence to support this theory within the airline industry. Electronic markets and hierarchies were seen to make the roles of traditional intermediaries redundant, though it has been suggested that intermediaries in the airline industry can still exist by adapting their business model towards more value-added aspects of the product.

REFERENCES

Aer Lingus, (2000). Annual Report and Consolidated Accounts. Dublin.

Bailey, J. P. and Y. Bakos (1997). "An exploratory study of the emerging role of electronic intermediaries." International Journal of Electronic Commerce 1(3): 7-20.

Bakos, J. Y. (1991). "Information Links and Electronic Marketplaces: The Role of Interorganizational Information Systems in Vertical Markets." Journal of Management Information Systems 8(2): 31-52.
Berghel, H. (2000). "Digital Village: Predatory Disintermediation." Communications of the ACM 43(5).

BizPlus (2001). Aer Lingus Flies Cut-Price Through The Net. BizPlus.

Byrne, G. (2000). Airlines Go Online. Business Plus.

Byrne, N. (2001). No Frills Man Flying Above the Storm. The Observer. London.

Choudhury, V. et al. (1998). "Uses and consequences of electronic markets: An empirical investigation in the aircraft parts industry." MIS Quarterly 22(4): 471-507.

Coase, R. H. (1937). "The Nature of the Firm." Economica N.S 4: 386-261.

Copeland, D. C. and J. L. McKenney (1988). "Airline Reservations Systems: Lessons From History." MIS Quarterly September: 353-370.

Daniel, E. and G. M. Klimis (1999). "The impact of electronic commerce on market structure: an evaluation of the electronic market hypothesis." European Management Journal 17(3): 318-325.

Furlong, S. (2001). Ryanair Flying above the Turmoil. Morning Note, Davy's Stockbrokers.
Kennedy, J. (2001). "Ryanair.com: How the Web Was Won." B2B.

Lee, H. G. and T. Clark (1996). "Impacts of Electronic MarketpLace on Transaction Cost and Market Structure." International Journal of Electronic Commerce 1(1): 127-149.

Malone, T. W. et al. (1989). "The Logic of Electronic Markets." Harvard Business Review(May-June, 1989): 166-170.

Malone, T. W. et al. (1987). "Electronic Markets and Electronic Hierarchies." Communications of the ACM 30(6): 484-497.

Mattimoe, J. (2000). Ryanair.com Ryanair Flying on Exciting Internet Strategy. Dublin, Merrion Stockbrokers.

News, R. (2000). IR£25 off on-line Bookings @ Ryanair.com. News updates.

O'Neill, M. (2001). Ryanair Profits Up Due To Ryanair.com. ElectricNews.net.

O'Neill, T. M. (2001). Online Airfares Battle. Aviation Upheaval. Sunday Business Post. Dublin.

Reuters (2001). Aiming for 60% of Sales on Net. The Irish Times. Dublin.

Sawyer, P. (2000). E-Business in Action. Business Plus.

Smith, E. (2002). Ryanair.com and Ticketless Travel. Dublin, Electronic Commerce Association of Ireland.

Strader, T. and M. Shaw (1997). "Characteristics of Electronic Markets." Decision Support Systems 21(3).

Tapscott, D. (1996). The Digital Economy: Promise and Peril in the Age of Networked Intelligence. New York, McGraw-Hill.

Williamson, O. (1975). Markets and Hierarchies. New York., Free Press.

Williamson, O. (1979). "Transaction Cost Economics: the Governance of Contractual Relations." Journal of Law and Economics 22(2): 233-261.

Yin, R. K. (1984). Case Study Research: Design and Methods. Beverly Hills, California, Sage.