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Martin Grossman

Bridgewater State University, mgrossman@bridgew.edu

Richard V. McCarthy

Quinnipiac University

Jay E. Aronson

University of Georgia

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E-COMMERCE ADOPTION IN THE INSURANCE INDUSTRY

Martin Grossman, Bridgewater State College – mgrossman@bridgew.edu
Richard V. McCarthy, Quinnipiac University, richard.mccarthy@quinnipiac.edu
Jay E. Aronson, The University of Georgia, jaronson@uga.edu

ABSTRACT

While other industries within the financial sector have vigorously embraced the Internet to obtain sustainable competitive advantage, the insurance industry has been slow to fully adopt e-commerce. This article examines the barriers as well as the success factors involved in making the transition to a Web-enabled insurance model. Emerging standards and technologies that will make possible the next generation of e-commerce in the insurance industry are discussed and a proposed research agenda is presented.

Keywords: e-commerce, e-insurance, Semantic Web, ontology, XML, ACORD

INTRODUCTION

Over the last decade the world has seen a meteoric rise in e-commerce, which can be defined as the sharing of business information, maintaining of business relationships, and conducting of business transactions by means of telecommunications networks [17]. Several distinct categories of e-commerce have emerged. Although business-to-consumer e-commerce has received the most attention in the press, it is much less prevalent than business-to-business e-commerce. An increasing number of associated transactions and processes that support both selling and purchasing activities on the Internet can be also included in the definition of e-commerce [16].

Although projections vary, many analysts predict that e-commerce will continue to grow unabated. Forrester Research projects that global e-commerce will reach \$6.9 trillion in 2004; Gartner Group estimates that B2B e-commerce alone will skyrocket to \$7.3 trillion in 2004, accounting for seven percent of all global sales transactions [13].

Indeed, in spite of the dismal plight of the dot-coms of the late 90s, everything from real estate sales to education has moved online. Yet not all industries have experienced the same level of success in transitioning from the traditional retail approaches to the less clear-cut online models. Several areas within the financial services industry, such as banking and investments, have had a significant amount of success adapting to cyberspace [5]. The insurance industry, on the other hand, has been lagging in its adoption of e-commerce [5, 12, and 7]. Although it is recognized that e-insurance has the potential to become a multibillion dollar industry, it is difficult to see how this will occur without some fundamental changes to the way e-insurance is being implemented. The current reality is that few available e-insurance offerings provide any real value and that less than 1% of all insurance sales are actually being transacted online [7]. This article examines the factors that influence implementation of e-commerce in the insurance industry and suggests some future technological trends that will accelerate the transition to this new era of e-insurance.

THE POTENTIAL OF E-COMMERCE IN THE INSURANCE INDUSTRY

Modern day insurance has evolved into a multifaceted and complex industry involving an array of divergent products and services. The current insurance industry landscape is characteristically hybrid in nature, offering everything from health and life insurance to property and casualty. Many insurance companies also offer financial services such as asset management as well as commercial leasing and lending [1].

A number of forces have challenged the insurance industry in recent years, resulting in stagnating sales in both the life/health and property/casualty sectors. Chatterjee and Jessup [1] attribute this slowdown to a number of factors: (1) the emergence of financial products such as annuities and mutual funds have lured customers away from traditional life insurance products, (2) skyrocketing costs of health insurance, (3) customers are turning to self-insurance and other risk management alternative measures as opposed to traditional property/casualty products, (4) intra-industry competition due to deregulation such as banks that are expanding their range of services.

Although it has been slow in adopting e-commerce, the insurance industry stands to gain substantially from picking up the pace. The specter of an e-enabled insurance landscape is appealing to many in the industry and the potential benefits to be accrued undeniable: (1) reduction of transaction costs. (2) more competitive products by incorporating the speed, flexibility and interactive capabilities of the net (3) the growth of markets by generating more leads and expanding markets more quickly at a relatively lower cost thereby increasing revenues, and (4) improvement of investment by expanding investment strategies, (5) opportunities for new and existing intermediaries [4, 9].

The use of the Internet is growing throughout the world at a rapid pace. While the U.S. still holds the lion's share of the global market, it is anticipated that this share will diminish from 36% to 25% by 2005 [15]. Not surprisingly, e-insurance is also being embraced globally. The European insurance sector, for example, has been active in making the transition [6]. Asia also shows enormous potential to drive this trend globally. Approximately 50% of domestic Chinese insurance companies' Web sites currently offer the capability to buy policies online [14], while India is leading the way in the rest of Asia, with rapidly expanding growth in the insurance industry [3].

BARRIERS TO E-COMMERCE IN THE INSURANCE INDUSTRY

Insurance companies that have started to venture online have met with varying degrees of success. In an examination of the web sites of the top 100 property-casualty insurance companies, McCarthy and Aronson [9] found the ability to locate an agent to be the most prevalent online capability. Few companies surveyed actually provided the ability to purchase an insurance policy online. This disparity seems to corroborate what Pastore [12] reports as the *schizophrenic* nature of e-commerce in the insurance industry. While companies are scrambling to gain a Web presence, few actually exhibit an e-business strategy.

Has e-insurance progressed at an evolutionary or revolutionary pace? A re-examination of the top 100 property-casualty insurance company Web sites studied in 2000 has shown that insurance company Web sites today offer more functionality and expanded services (see Table 1). However, the increased functionality of the Web sites over a four-year period can hardly be termed revolutionary.

Function	# of Companies Offering this Function in 2000	# of Companies Offering this Function in 2004
Request Quote	32	34
Purchase Policy	2	4
Site Available in Spanish	0	7
Coverage Calculator	0	4
Comparison to Competition	0	2
Obtain a Copy of a Policy	12	19
Make Payments Online	9	20
Change or Update Policy	0	15
Provide Secure Site	0	47
Explanation of Coverage	0	23
Obtain Auto Insurance Card	4	7
Report a Claim Online	27	29
Locate Agent	43	57
Total Surveyed	100	100

Companies who have started to implement e-insurance have confronted some monumental challenges. Chatterjee and Jessup [1] describe SAFECO's foray into e-insurance. Assimilating the new Web based technology into its current business activities and strategies proved to be one of the most critical success factors for this company. Obtaining the necessary technical expertise to build and maintain the involved infrastructure also proved to be problematic but of vital importance. In their study of several British companies, Mieczkowska, Barnes, and Hinton [11] also found that the ability to realize a fit between the new technology and the already existing processes is a key success factor.

Fisher [4] uses the experiences of such companies as Ohio Casualty, InsWeb, and InsurePoint to offer some *lessons learned* and draw some new conclusions regarding e-insurance. Many of the early projections that e-commerce would bring revolutionary change to the industry need to be tempered with a more evolutionary perspective. The idea that the Internet would radically change fundamental business processes and disintermediate traditional agents has not come true. Instead insurance companies are using e-commerce in a more modest way to reduce overhead, eliminate redundancies, and free up agents so they can deal more effectively with sales and customer service issues.

Among the most significant barriers to e-commerce adoption has been the alienation of agents by companies selling insurance through the Internet due to fears of cannibalization [7], inter-state

regulation [9], and the conservative culture of the insurance industry itself [11]. There are also a number of technical issues that are impeding progress of e-insurance. The complexity of the underlying technology involved in implementing e-commerce has been a challenge for insurance companies [1, 4]. In many insurance companies, silos of technology have been created which are divided along product lines. Typically these systems are mainframe based and resistant to rapid change. Much of the information technology related to e-insurance is being used to automate rather than to fundamentally change existing business processes [11]. Another part of the problem stems from lack of standards in the industry, allowing for the reliable exchange of information. The lack of international standards has been cited by several authors as one of the most significant challenges facing the insurance industry [9].

EMERGING STANDARDS AND TECHNOLOGIES

The eXtensible Markup Language (XML)

Perhaps the most important infrastructure underlying e-commerce is the eXtensible Markup Language (XML). XML was originally conceived as a replacement for the Hypertext Markup Language (HTML). While HTML has been universally adopted, its inherent flaws have become evident as the Web has evolved. Perhaps the most limiting aspect of HTML is that it only provides the user with a fixed set of tags which are strictly for the presentation of text data within a graphical browser. It does not have the capability of specifying data structure or meaning (e.g. specifying whether the element is a 'customer name', 'address', or 'id number'). This type of semantic description, or meta-language, is a crucial aspect of being able to effectively search through vast stores of document data and to allow inter-computer communication. The XML standard provides for a data description language (i.e. meta-language) that is flexible, self-documenting, and extensible. Separating style from structure, operations on XML data are accomplished using translation applications such as XSL (eXtensible Stylesheet Language). Some of the associated standards that have been developed to work in conjunction with XML are: (1) XML Namespaces – specify content in which XML tag names should be interpreted, (2) XML Schema – allow XML structures to be defined within XML itself, (3) eXtensible Style Sheets (XSL) – includes XML formatting objects to describe how a document should be displayed or printed, (4) XSL Transformations – converting XML data from one XML structure to another or for converting XML to HTML.

There is little doubt that XML will ultimately become ubiquitous on the browser and that it will facilitate faster and more accurate searches on the Web, an essential aspect of achieving a strategic edge. At present XML is being used more often for data than it is for documents, allowing application to application data exchange in a platform and programming neutral environment.

XML is emerging as the universal glue that binds incompatible information systems. It has been called the *lingua franca* and the *Esperanto* of data. One of the most troubling IT issues has always been the linkage of disparate components making up the enterprise information system. XML is being applied in ways that facilitate both inter and intra organizational efficiencies. Using XML, structured data of all types can be shared on the WWW, intranets, and elsewhere, via an assortment of device types (e.g.

browsers, televisions, receivers, PDAs, cell phones, pagers). By separating information content from presentation, XML allows information publishers to 'write once and publish everywhere'.

Early e-commerce systems have typically only provided Web-based product information along with an order entry capability. However, what is needed to achieve the next level of e-commerce functionality is the ability to provide information to a full range of users (e.g. employees, customers, suppliers and partners). In addition, organizations must integrate front and back office applications, as well as legacy systems, with the Web. To get to this stage, a data representation mechanism is needed that provides an interchange between the various structures of the applications. XML is providing the backbone of this infrastructure.

ACORD Standards

The Association for Cooperative Operations Research and Development (ACORD) is a nonprofit standards organization that has been instrumental in defining XML-based standards and forms for the insurance industry. ACORD standards currently available encompass the three basic industry segments: Life and Annuity, Property and Casualty, and Reinsurance. Within each category are several XML based standards which are intended to allow for the interoperation of insurance elements in a seamless fashion.

ACORD's efforts have received quite a bit of recognition from other groups, including standards bodies and vendors. In 1999, ACORD teamed with the Object Management Group (OMG), the software standards group responsible for such standards as CORBA, the Unified Modeling Language (UML), and Model Driven Architecture (MDA) (<http://www.omg.org/news/releases/pr2001/2001-04-02.htm>). This alliance is intended to provide a formal representation of software standards for the insurance industry. More recently, ACORD has joined forces with Microsoft in a joint effort to create a forms service that will link standardized insurance forms to XML Web Services [10]. Vendors are also starting to take notice of the synergies afforded by XML with new product offerings (e.g. FairIsaac's XML Manager for Insurance - www.fairisaac.com/rules), Focus Business Solutions's goal:technology XML toolkit).

The Emerging Semantic Web and the Future of e-insurance

While the efforts of ACORD and other bodies are paving the way for the future of e-insurance, it is clear that many challenges remain and that there is a long way to go. To really bring the Web to its full potential as a medium for e-business, further expansion of the basic infrastructure is needed. Today, the primary impetus for this comes from Semantic Web research, which is rooted in artificial intelligence. Originally a vision of Tim Berners-Lee, the goal of the Semantic Web is to put data on the Web in a form that machines can naturally understand, or to have the capability of converting it to that form. The next generation of the Web will be one of data that can be processed directly or indirectly by machines [2].

While XML is definitely an improvement over a pure text and database solution, it only represents the first step in the process of building a Semantic Web. With XML, data achieves

independence only within a specific domain (e.g. insurance industry). Standards, such as those provided by ACORD, are certainly a step in the right direction in providing a common structure within this domain. But data can be composed from multiple domains. For example, the word 'title' might have one meaning in a publishing context and a very different one in the insurance industry. To eliminate such ambiguities *taxonomies* are needed, in which simple relationships between categories can be established. Even further along up the scale are *ontologies*, which will allow new data to be inferred from existing data by following logical rules.

Kanter [8] describes a fictionalized scenario that could take place in a not too distant future in which semantic web technology has become commonplace and software agents mediate insurance transactions. Picture a typical car accident scene in which the victim's car computer transmits to a carrier the fact that an accident occurred. With present day technology it is conceivable that the victim's car computer could transmit information, including the name of the policy holder and the location of the accident, to the insurance carrier's computer. For this to be deciphered, it would have to be encoded in an XML like format in which fields such as 'location' and 'policy holder' are synched up with fields in a database. In an idealized semantic web future however, those computers would actually understand each other by using inferential rules based on ontologies. With the aid of ontologies, the concept of an 'accident' would be related to other concepts such as vehicle involvement, possible injury, repair, claims or body shops. It is easy to see how agents, claims reps, carriers and other stakeholders could exchange information in ways that would eliminate the need for human interaction with semantic web technology.

CONCLUSION

The insurance industry is undergoing a major transformation as it grinds towards adoption of e-commerce. Standards bodies such as ACORD have been instrumental in facilitating this evolution. However, the next generation of Web technology will allow for agent-mediated e-commerce and allow for a new semantic model of data exchange based on ontologies. Ontologies are starting to come out of the cloistered halls of AI research labs and onto the radar screens of mainstream IT managers, who view it as way to achieve competitive advantage. With further exploration of ontologies; e-insurance may indeed reach its full potential.

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