

<http://ansinet.com/itj>

ITJ

ISSN 1812-5638

# INFORMATION TECHNOLOGY JOURNAL

**ANSI***net*

Asian Network for Scientific Information  
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

## Enterprise Information Construction and Countermeasure Research under the Environment of Electronic Commerce

Xia Hu, Min Zhou and Shuang Li

School of Management, China University of Mining and Technology, Xuzhou 221116, China

---

**Abstract:** As is growing interest in the conduct of business transactions by electronic means through the Internet and dedicated networks this is often referred to as Electronic Commerce (EC). This paper reviews developments in electronic commerce with a particular focus on its applicability and uptake within the construction industry. Electronic commerce business models are reviewed and the enablers and barriers to their uptake in the construction sector presented. Therefore this paper concludes with future trends in electronic commerce and the need for construction organizations to make the necessary investments that will enable them to take advantage of these and further aiming to contributing in solving this problem by applying automated safety rule checking to enterprise information construction and countermeasure research under the environment of electronic commerce.

**Key words:** Electronic commerce, enterprise information construction, countermeasure research, developments

---

### INTRODUCTION

The Internet has revolutionized the way in which information is stored, exchanged and viewed. It has opened new avenues for businesses which were only a decade ago almost inconceivable. Businesses have recognized the possibilities such a revolution has opened and have plunged into the global race to take advantage of the opportunities offered by the new Information and Communications Technology (ICT). Which are yielding a wide range of new computer-based tools (Rao *et al.*, 2003; Standing and Lin, 2007) to support the architecture, engineering, construction and facilities management industries (collectively referred to simply as construction in this paper). These tools are that particularly those associated with Building Information Models (BIMs) for project modeling and integration promise great increases in the effectiveness and efficiency of designing and managing construction projects (Senthilkumar *et al.*, 2010). However, these improvements require more than just technical solutions; their full potential cannot be realized without corresponding changes in the work tasks and skill sets of the project participants.

The objective of this research is about enterprise information construction under the environment of electronic commerce. And the detailed reviews developments in the adoption of electronic commerce in construction. It presents taxonomy for electronic commerce and briefly discusses the different developments in electronic commerce both within and

outside construction. It then reviews electronic commerce trends in construction including the barriers and enablers for electronic commerce in construction. Finally it discusses future trends for electronic commerce in construction.

### BASIC CONCEPTS

**Influence factors in electronic commerce:** An empirical investigation conducted by Iacovou *et al.* (1995) and it indicated that the main reasons why small companies adopt Electronic Commerce (EC) are external pressure, organizational readiness and perceived beliefs. The research indicated that external pressure comes mostly from the trading partners. The study (Prescott, 1997) indicated that influence of a trading partner depends on the intensity of the business relation. The study (Chattoe and Gilbert, 2000) showed that the social network between trading partners plays an important role: The socioeconomic strength of a business partner, the number of trading partners and the type of relations between trading partners. Evaluation of organizational readiness via the available financial and technological resources showed that the higher the level of resources the more likely the organization will adopt electronic commerce (Iacovou *et al.*, 1995), although the relationship is not very strong.

The studies (Bleuel and Stewen, 2000) showed that organizational readiness measured by the type of business plays a significant role. Service oriented

organizations are significantly more likely to be adopters than manufacturing-oriented organizations. Perceived beliefs, both tangible and intangible, are strongly influenced by managerial support, understanding and enthusiasm (Iacovou *et al.*, 1995; Prescott, 1997) i.e. the extent of how much the manager is forward-looking, success-oriented, cautious or innovative.

**Electronic commerce development:** As that the authors (Korper and Ellis, 2000) had commented upon the wide range of technical skills necessary for electronic commerce projects including: Network operating systems, back end systems, web servers, programming and graphical user interfaces. However, those had not discussed the use of such skills in actual commercial or industrial practice (Korper and Ellis, 2000). And some researchers (Kalakota and Whinston, 1997) argued that electronic commerce projects involve technical and business aspects, both of which need to be properly addressed in order for the project to be successful. It had commented that for organizations wishing to utilize legacy systems for electronic commerce (Laudon and Laudon, 2000); migrating software to the World Wide Web requires a thorough understanding of systems architecture design principles in order to determine what will be executed on the client and server sides and what communication between client and server will occur. As argued that since electronic commerce across the Internet transcends physical boundaries (Obonyo *et al.*, 2001) it can make established legal and tax regimes difficult to apply and electronic commerce system developers need to be aware of such difficulties.

In summary, numerous researchers have noted that electronic commerce systems development requires a wide range of skills to be conducted successfully, however, little research appears to have been undertaken to examine such skills in actual commercial or industrial practice.

**Electronic commerce skills in the enterprise information construction:** In addition to developing and refining enterprise information construction performance perspectives and indicators, this study attempts to model the dependency of perspectives on indicators and the interdependency of indicators across the five perspectives.

It is possibility to accumulate the results of each performance indicator and derive a result which indicates the indicator's importance in terms of indicator interdependence. This illustrates that the specific indicators developed for a specific perspective might have an influence on another perspective. Therefore, the performance indicators can be analyzed to illustrate which

are the critical ones, e.g. the ones with a high score that can have influence beyond their own perspective. The electronic commerce is played an important role to support the enterprise information construction and e-commerce has myriad direct and indirect, internal and external effects on individuals and organizations. The effect of a new technology such as e-commerce on an individual organization can be assessed by considering its effect on products.

## FRAMEWORK AND METHODOLOGY

**System frame management:** The research of the aforementioned models and frameworks shows that EC subject is not a distinct and unique phenomenon that is employed by a company alone. Even, if the website of a company that has capacity of exchange but the consumers would not have access to the network, a suitable legal system would not be compiled to solve the difference in the electronic exchange, advanced and suitable systems of communications would not be available and the electronic financial and banking systems are not present, then it is evident that EC would not be fruitful at any cost. Electronic commerce adoption can be studied and assessed at all levels for successful implementation of EC.

The system frame diagram of enterprise information construction is shown in Fig. 1 which is including that the aspect of purchasing management, marketing

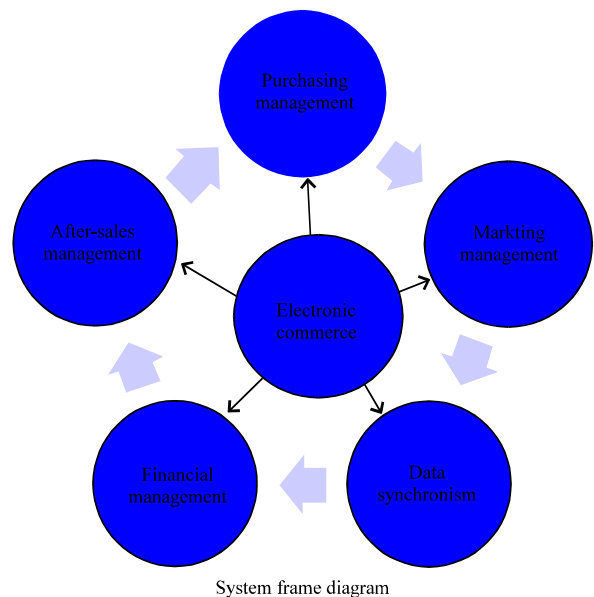


Fig. 1: System frame diagram of enterprise information construction

Table 1: System frame related to the electronic commerce adoption and their priority.

Row	Projects	Mean rank	Average	Standard deviation
1	Purchasing	12.3	4.80	0.427
2	Marketing	11.9	4.67	0.436
3	Data synchronism	10.8	4.56	0.458
4	Financial	9.9	4.39	0.439
5	After-sales	9.1	4.31	0.455

Table 2: World trade of digitized products (DP) in the year of 2008

Top 10 exporters	Total imports 000 US\$	Total exports 000 US\$	DP imports% share of total imports	DP exports% share of total exports	Share of world exports (%)
USA	8,352,674	9,546,213	0.8	1.4	15.8
Germany	3,140,628	4,831,631	0.6	0.8	11.2
UK	4,529,068	4,784,630	1.4	1.8	5.5
Italy	1,728,056	1,580,427	0.8	0.7	4.8
Japan	2,049,835	3,892,931	0.7	0.8	8.5
Netherlands	2,223,189	2,705,782	1.3	1.6	3.7
France	3,124,426	2,597,626	1.2	0.9	5.8
Canada	3,598,028	1,838,046	1.7	0.8	4.9
Switzerland	2,015,259	813,319	2.4	1.1	1.7
Spain	1,320,929	1,326,140	0.9	1.3	2.5

management, data synchronism, financial management, after-sales management, among these system frame the electronic commerce is taking the position of core dominance. However, in the whole process of the five stage enterprise management is an organic unity of system frame, as we can see from the Fig. 1, along the coarse arrow it undertake to each other and the small arrow is stand for the EC that act as an important pole for give service to the other five enterprise management.

The system frame related to the electronic commerce adoption and their priority are shown in Table 1. The purchasing management of mean rank is 12.3, average is 4.8, the standard deviation is 0.427, data collection of system frame is implied that the importance of the role of the management function.

**Study of the EC development in company:** As can be see that the there exist significant connections and tax between the pole of electronic commerce adoption and stages of the development of electronic commerce of companies (Mukhopadhyay and Cooper, 1993). In order to test the developed framework, correlation tests were applied. The correlated study is carried out via some experiment and investigation. Any decision by developing countries may take to modify their tax legislation to accommodate e-commerce, however, will have to take into account the significant role of tax and tariff revenues in their national budgets. Until new international agreements on e-commerce taxation have been defined, an increasing number of goods and services will be traded on-line, largely tax-free. This will have an effect on government revenue, especially if the goods and services have been subject to import duties in the past.

The another of that for some products, such as software, digital distribution could already be feasible in

the near future; others such as film, where the video quality for broadband still needs to be improved, will take longer. Much will also depend on careful consideration of all costs involved, including transportation, production and distribution costs.

As seen from Table 2 of world trade of Digitized Products (DP) in the year of 2008, the most important exporter of digitized products is the United States, accounting for almost 16% of world exports. It is followed by Germany, the United Kingdom, Ireland, Japan, the Netherlands and France which combined account for 35.3% of total exports. Developed countries account for 82.5% of exports while the developing countries' share is only 17.5%. Among the developing countries, the main exporters of digitized products such as the Singapore, China, Mexico, Hong Kong (China), the Republic of Korea and Taiwan Province of China.

## DISCUSSION AND CONCLUSIONS

It is evident that the use of electronic commerce in enterprise information construction can yield several benefits. Electronic solutions will enable more people to be reached with much less effort than it currently takes to reach a single customer. It will be possible to reach thousands at the same time and will cost only a fraction of what it costs today. The use of electronic commerce is still in its infancy in the construction industry with the main barrier being that the use of the Internet is not ubiquitous. In spite of being relatively slow in adopting this new technology, the construction industry is beginning to recognize the potential advantages that electronic commerce solutions have to offer. In particular, the calculations of domestic taxes levied on imports demonstrated the significant impact e-commerce could

have on tax revenues. In this study, only a small number of goods were considered but the revenue impact is already considerable. If these calculations were extended to services which are often subject to consumption taxes and which are the fastest growing e-business activities, the tax base of many countries could be substantially eroded.

This study reviews developments in electronic commerce with a particular focus on its applicability and uptake within the construction industry. Electronic commerce business models are reviewed and the enablers and barriers to their uptake in the construction sector presented. The study concludes with future trends in electronic commerce and the need for construction organizations to make the necessary investments that will enable them to take advantage of these. And further aiming to contributing in solving this problem by applying automated safety rule checking to Enterprise information construction and countermeasure research under the environment of electronic commerce is to be done.

#### **ACKNOWLEDGEMENTS**

This study was supported by a grant from the Fundamental Research Funds for the Central University (NO. 2013XK01).

#### **REFERENCES**

- Bleuel, J. and M. Stewen, 2000. Value added taxes on electronic commerce: Obstacles to the EU Commission's approach. *Intereconomics*, 35: 155-161.
- Chattoe, E. and N. Gilbert, 2000. Accepting government payment for new agri-environmental practices: A simulation approach to social complexity. *Proceedings of the 18th Congress of the European Society of Rural Sociology: How to be Rural in Late Modernity Process, Project and Discourse*, August 24-28, 1999, Lund, Sweden, pp: 1-26.
- Iacovou, C.L., I. Benbasat and A.S. Dexter, 1995. Electronic data interchange and small organizations: Adoption and impact of technology. *MIS Q.*, 19: 465-485.
- Kalakota, R. and A.B. Whinston, 1997. *Electronic Commerce: A Manager's Guide*. Addison-Wesley Publishing, Reading, MA., USA., ISBN-13: 9780201880670, Pages: 431.
- Korper, S. and J. Ellis, 2000. *The E-Commerce Book: Building the E-Empire*. 2nd Edn., Academic Press, London, UK., ISBN-13: 978-0124211612, Pages: 248.
- Laudon, K.C. and J.P. Laudon, 2000. *Management Information Systems: Video Cases and ABC News Library*. 6th Edn., Prentice-Hall, London, UK., ISBN-13: 9780130402080, Pages: 588.
- Mukhopadhyay, T. and R.B. Cooper, 1993. A microeconomic production assessment of the business value of management information systems: The case of inventory control. *J. Manage. Inform. Syst.*, 10: 33-55.
- Obonyo, E.A., C.J. Anumba, A. Thorpe and B. Parkes, 2001. Agent based support for electronic procurement in construction. *Proceedings of the 8th International Workshop of the European Group for Structural Engineering Applications of Artificial Intelligence*, July 20-22, 2001, Loughborough University, UK., pp: 99-113.
- Prescott, M.B., 1997. Understanding the internet as an innovation. *Ind. Manage. Data Syst.*, 97: 119-124.
- Rao, S.S., G. Metts and C.A.M. Monge, 2003. Electronic commerce development in small and medium sized enterprises: A stage model and its implications. *Bus. Proc. Manage. J.*, 9: 11-32.
- Senthilkumar, V., K. Varghese and A. Chandran, 2010. A web-based system for design interface management of construction projects. *Automation Construction*, 19: 197-212.
- Standing, C. and C. Lin, 2007. Organizational evaluation of the benefits, constraints and satisfaction of business-to-business electronic commerce. *Int. J. Electron. Commerce*, 11: 107-134.