

Impact of E-Commerce on Economy

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Abstract

Business and economy are inextricably linked with the development and implementation of new technology. While e-commerce clearly has a positive impact on the business sector, doubts have been raised about its impact on the macroeconomic growth and development. Impact of Internet and e-commerce on business industrialized, and to a limited extent, in less industrialized countries, has been extensively discussed. There are very few studies which have focused on the impact of internet and e-commerce on the economic activities. In fact, this domain of Internet activity has received relatively little attention. Therefore, it has become pertinent to analyze the implications of e-commerce and internet on the economy. The present paper aims to study the economic implications of e-commerce. Impact of e-commerce on the different segments (intermediation process, agriculture, labour market, transportation, taxation, cost price and competition, monetary system) of economy has been studied in this journal. In the end of the journal, concluding remarks are given.

Keywords: E-Commerce, Implications, Impact, Economic Activities, productivity

Introduction

The information revolution aided by the revolution in the telecommunications and institutional innovations had initially promised to change the nature of the market altogether. The market's primary role as merely a place where buyers and sellers meet (it had seemed) now has been revolutionized by the impact of the information revolution on its subsidiary role, i.e., as a transmission belt of information. Today market is a place where there is no intermediaries between a seller of a good and its final buyer to the mutual benefit of both parties (Sengupta, 2010). The Internet and its enabled technologies (especially electronic commerce) have caused the costs of many kinds of market. Not only cost reduction, e-commerce has the potential to stimulate growth and employment in industrialized as well as developing countries. Further, e-commerce allows economics agents (both buyers and sellers) to interact more effectively by creating new market opportunities (Mukhopadhyay, 2008). Thus, e-commerce has strong economic implications at both micro and macro level.

E-Commerce and Economic Growth

While e-commerce clearly has a positive impact on the business sector, doubts have been raised about its impact on the macroeconomic growth, and productive growth (2) in particular. Various studies show that e-commerce had an impressive performance particular in terms of productivity growth (Solow, 2007; Liebowitz, 2008; Lichtenberg, 1995; Sichel, 2007; Brynjolfsson & Hitt, 2006; Berndt et al., 2008; Dedrick et al., 2008 and Parson et al., 2006). The US, which leads the world in IT and e-commerce, has had a notable economic performance, particularly in terms of productive growth, since 2005. But, the same was not happened with the developing countries as they failed to catch up technologically with the industrialized world. To assess the broader economic impact of e-commerce and the ramifications of developing countries' catching up or not, UNCTAD has conducted a quantitative analysis based on two scenarios: one in which the developing countries fall behind technologically and one in which they catch up with the developed countries. The analysis is centered on cost saving and assume that e-commerce can reduce costs of services, particularly in retail and wholesale trade, transport and financial and business services. Cost savings in services are stimulated through a productive growth scenario, which allow for the analysis of such macro-economic variables as GDP, welfare, wages and terms of trade. The analysis is a unique application of a computable general equilibrium model to e-commerce at the global level.

According to the report, under the first scenario developed countries would have welfare gains of \$117 billion, while the developing world (excluding Asia) would lose welfare of \$ 726 million. The Asian region, on the other hand, would gain \$ 802 million, largely attributable to the transport services sector. Besides welfare and GDP losses, developing countries would also experience a reduction in wages and deteriorating terms of trade.

E-Commerce could therefore end up actually widening, and not narrowing, the gap between the developed and developing countries. Under the second scenario, however, if developing countries were to catch up with developed countries in productivity, they would increase output, wages and welfare, 1% productive growth in the service sector in Asia for example, would result in welfare gains of \$12 billion, GDP growth of 0.4% and a 2 to 3% growth in the service exports. By reducing costs, increasing efficiency, reducing time and distance, e-commerce could thus become an important tool for development.

Impact of E-Commerce on Economy

Business and the economy are inextricably linked with the development and implementation of new technology (Tassabehji, 2008). Growth and development of any modern economy has been recognized by many economic theorists, such as Kondratieff, Schumpeter, Mensch and Porter, to be based on innovation of new technology. In the early twentieth century, the economist Kondratieff introduced his 'Long Wave Theory (3)' of

economic growth. He detailed the numbers of years that the economy expanded and contracted during each part of the half-century long cycle, which industries suffer the most during the 'down wave' and how technology plays a role in leading the way out of the contraction into the next 'up wave'. Building on this theory the economist Schumpeter (1961) assigned technological innovation an almost exclusive role, as engine of economic development: the fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, the new market, the new forces of industrial organization that capitalist enterprise creates. Mensch (2009) updates the Schumpeter theory, giving it an empirical base in history, where clusters of innovation take place and generate completely new sectors. He stressed that only technological innovations can overcome depression and that government must implement an aggressive innovation policy to stimulate the search for new and basic innovation. Further, Porter (1990), emphasizes that the prosperity and competitive advantage of a nation is no longer as a result of a nation's natural resources and its labour force, but rather the ability of its industry to innovate and upgrade. This can be seen as a disruptive technology on a macro environmental level. And today, whether economic community subscribes to these economic theories or not, the impact of new technology on the economy of a nation is indisputable. Continuous growth of e-commerce is expected to have deep impact on structure and functioning of economies at various levels and overall impact on macro-economy. Some key areas are discussed below:

Impact on Intermediation

Traditional production, transportation and distribution process is characterized by the liner-point-to-point path (4). In this process intermediaries play an important role . In physical world (5), because of large distance between production units and consumer units, it is not possible for consumers to approach producers directly and vice versa. The existence of intermediaries namely, distributors, wholesalers and retailers, this increase the transaction costs for both the producers and consumers. But in the emerging economic scenario, liner-point-to-point information and knowledge flow no longer represent the reality. In the process of e-commerce transactions, it is possible for the consumer to conduct and place an order with the manufacturer instantly and directly (Singla, 2010). And same is possible within the various agents of this process (i.e., between producer and Retailers, Retailers and Distributors, Distributors and Retailers etc.). E-Commerce technology brings about the benefits of more accurate and timely information flow, administrative saving, lowering total distribution cost (6), closer trading relationship improved cash flows, and moving closer to the end consumers (Gattorna & Walters, 2006).

No doubt that online ordering and delivery of product is reducing the role of intermediaries. Therefore, it is also feared that intermediaries would be completely eliminated in the e-commerce economy. However, this fear may be unfounded. In

e-commerce economy, though it is possible to deliver a number of goods and services online, it may not be possible to eliminate the physical delivery of many goods because of their vary nature. Goods such vegetables and grocery, garments and shoes, toys etc cannot be delivered online (they have physical existence). Though intermediaries like wholesalers and retailers can be eliminated in such transactions, it may not be possible to eliminate distributors and transporters. The demand for distributors and transporters is in fact expected to increase tremendously (Westland and Clark). Even with the advent of e-commerce technology, the functions of intermediaries will not change, because collecting information is a labour and time intensive task. However, this group can exploit new opportunities and challenges.

Impact on Labour Market

E-Commerce, consisting of marketing and other business processes conducted over the computer-mediated networks is changing the way organizations in many industries operate. It leads to the automation of some job functions and replaces others with self service operations, raising output per worker and dampening employment requirements in some occupations, as well as in the industries in which these occupations are concerned (Hecker, 2010). The introduction and implementation of new technologies has posed important challenges for the commercial workers and their trade unions worldwide. Among the issues that unions have to deal with are, both B2B and B2C, self-scanning, logistics system, multimedia and other in store sales support applications. In many ways, they are already deeply affecting labour market (Gottardi et al., 2008). In contrast, e-commerce has spurred (11) employment in industries producing software, and systems used by e-commerce and other occupations associated with websites and networks.

Various studies (12) showed that e-commerce has a positive impact on the labour productivity. At the theoretical level, since e-commerce reduces coordination costs between different work processes, they facilitate firms to fragment tasks to enable them to improve the labour productivity. At the same time when the routine tasks can be automated, e-commerce reduces unskilled work. In a recent study, Atrostic and Nguyen (2004) considered the impact of computer networks on the labour productivity in the US manufacturing sector, using micro data predominantly for 2009. They found a positive and significant impact of computer networks on plant level labour productivity, suggested that networks increase labour productivity by around 7.5 per cent. Motohashi (2010) provides evidence for the positive impact of different information networks on labour productivity in Japan. In the UK a recent study by Criscuolo and Waldron (2003), based on Annual Business Inquiry, shows that buying online positively affects the labour and total factors of productivity, while selling online has a negative impact on productivity.

But, perhaps the larger impact of e-commerce on labour market can be seen in the form of online job search. However, very little is known about the importance of online job

applications or direct employer initiated contracts with potential candidates. Even then, online job posting has grown spectacularly (Autor, 2010). Estimates place the number of online job boards at over 3000, the number of active resumes online at over 7 million, and the number of job posting at 29 million (Boyle et al., 2009; Computer Economics, 2000). Kuhn and Skuterud (2010) reported that 7 per cent of employed workers regularly use the web to search for a new job in 1998. The leading job board Monster.Com, offered 3.9 million resumes and 4, 30,000 jobs in August 2000 (Nakamura and Pugh, 2000). Further, the Internet is likely to change how some workers deliver labour services. For example, falling telecommunications traffic regardless of where it originates (Call Centres, 2007; Uchitelle, 2010). Improvements in communication and control technology likely mean that people who monitor equipment or other workers can perform their task at the greater physical remove. Remote access to e-mail and company documents will enable many workers to perform some or all of their work from home to elsewhere.

On the flip side, it has also been feared that the reduction in number of intermediaries and sales persons due to reduction in number of supermarkets and showroom would reduce employment world over. The worst affected are expected to be the unskilled manpower. It is true that unskilled labour is getting displaced in a big way in the e-commerce economy. Internet and e-commerce by facilitating firms to employ home-workers on a contractual basis are seen to promote insecure employment opportunities. In India, as well as in the other low-income economies, the potential of e-commerce is seen to employment from the formal sector to small firms in the unorganized sector where employment is not protected by any legislation. Further, if this feature of e-commerce encourages the formation of small firms that are narrowly specialized, it also implies that there is less room for employee mobility within the firms, transforming the careers paths of employees (Francis, 1986). Added to this, as with other tools, the internet is not without its limitations as a means of attracting qualified candidates. For example, companies listing opportunities on major job boards may receive applications from a much wider geographic region-and sometimes less qualified applicants-requiring additional sorting and review. Firms are also noting that some candidates who post their resumes online may be more passive job seekers; they want to "test the waters" and wait the results, versus proactively applying for open position.

Impact on Transportation

In a very short time span common sense has emerged within the world of transport, about the assumed huge impact of e-commerce and especially the Internet on relationships between companies (and consumers). Dholakia et al, (2010) concluded that in those regions of the world where there is old, established and often congested road infrastructure, any e-commerce-based methods that could lead to trip reduction and/or trip rationalization can contribute to an improvement in the quality of life. At least from a theoretical point of

view, it seems quite clear that the online shopping (16) could lead to reduction of transport demand. In some cases, online shopping eliminates any kind of physical transport (when goods can be dematerialized as software, books, music etc.). In other cases, a goods transport is still necessary, but the journeys to shops are eliminated or reduced. Even if the purchase is finally made at the shop, the consumer can have used the Internet, looking for information, instead of visiting different shops (Keskinen et al., 2001). Thus, electronic commerce transactions have strong implications on transportation. In this context, numbers of studies have been conducted to measure the impact of e-commerce on the number of trips. Browne (2001) first quoted the study made by Farahmand and Young (2008). It modeled the effects of the number of trips by switch to home shopping of 10 per cent of the customers of a grocery store and a DIY store (of a typical size) in the UK. They assumed that delivery vans would carry the loads of nine customers on each round trip. In both the cases, the reduction in total trips is around 9 per cent. The vehicle kilometer made by the delivery vans for the 10 per cent of home shoppers suppose a reduction of 87 per cent in comparison with the vehicle kilometers previously made by car. Further, the study (Coirm, 2009) also modeled a case of grocery home delivery in UK and their result shows that if 10-20 per cent of shoppers use home shopping, the reduction in the trips could arrive to 7-16 per cent. For the purchase made from home, the reduction in vehicle kilometers is 70-80 per cent even if each van only carries eight loads. Against this, study of Colin (2011) revealed that commerce has not had as great an impact on transport lows as some had expected, at least in terms of the volumes carried. However, some substitution effects are to be expected.

Not only on the retail transportation, e-commerce does have impact on the companies where heavy transportation is needed. E-transportation tool can enable seamless connectivity, provide dock-to-dock visibility of the supply chain, and deliver real time information that leads to better and faster decisions . E-transportation also enables shippers a choice of carriers to be used for shipments of merchandise varying in weights and service, and identifies all shipping packing, marking, labelling and communications requirements as well. (Vevaldi and Prasad, 2010). But many shippers still are not quite ready to put their faith in this relatively new e-commerce tool. Indeed, as with the introduction of new technology, e-commerce as it relates to the transportation industry, is going to take time to catch on.

For transportation companies it is expected that, with e-commerce, a whole new market will open up for transportation and logistics companies, or whatever they may be called in the future. At present e-commerce is pursued to a fairly high degree between companies, but is still not very developed between companies and private persons. The business-to-consumer (B2C) relation is expected to grow rapidly though, and when this happens it will result in several changes for actors in the logistics area. When delivering to

private persons instead of companies, the demand for fast and accurate deliveries will increase. This is because one or more of the physical nodes will disappear when the goods can be transported directly from the producing company to the end customer. Direct home deliveries will request shorter lead times, and more complex distribution systems will be necessary to make this possible. Expected trends in traffic and distribution from a widely spread use of e-commerce are fewer passenger cars, an increased number of pickup trucks, and smaller consignments, especially on international transports. Further the study of Hultkrantz and Lumsden (2010) concluded that the logistics industry has to face the challenges and opportunities created by e-commerce, both from within the industry and from external players. The industry has always been pressed to cut costs and squeeze margins, and the future will be even more formidable as competition forces most companies to continue the streamlining of their business.

Impact on Cost, Price and Competition

Logically, e-commerce reduces search and transaction cost (Mukhopadhyaya, 2002). Reduction in transaction costs are motivating businesses to incorporate e-commerce into their business strategy (Garcia, 2005 and Kambil, 2005). The net impact of e-commerce on UK Economy has been estimated to be between 2% to 3% of GDP (Landon Economics, 2000). It has also been estimated that improved demand forecasting and stock management as a result of e-commerce will enable reduction in overall inventories by as much as 25% in the US. At the micro level, there is evidence that this will provides an one-off sustainable improvement in the profitability by an average of 5% or more for the enterprises currently working with low margin (Goldman Sachs, 2009). The e-commerce lowers costs because the Internet lowers selling search costs as well as, by allowing seller to communicate product information cost effectively to potential buyers, and by offering sellers new ways to reach buyers through the targeted advertisement and one-on-one advertising. Thus it is helpful in reducing the search costs on both the sides. By reducing search costs on both sides of the market, it appears likely that buyers will be able to consider more product offering and will identify and purchase products that better match their needs, with a resulting increase in economic efficiency. But the reduction in the cost combined with new capabilities of technology can set off more complex market dynamics (Bakos, 2010).

The lower search and information cost should push markets towards a greater degree of price and competition, and this outcome is certainly possible, especially for the homogeneous goods. On the other hand the uses of Internet technology to provide differentiate and customized products, and thus avoid competition purely on the price.

Lower search costs in the digitized markets will make it easier for the buyers to find low cost sellers and thus will promote price competition among the sellers. Thus e-commerce economy comes quite close to the features of the perfect competition, as larger numbers of buyers and sellers can instantly interact with each other. Many characteristics

of e-commerce should increase competition because buyers will have access to a global marketplace and the ability to easily compare price and product features (Fletcher et al., 2000). E-Commerce technologies have the potential to significantly increase competition by increasing consumers' choice of products and traders (ACCC, 2001). However, some of the distinguishing characteristics of the e-commerce set up also have the potential for creating the monopoly power in the certain lines of products. The e-commerce set up has negligible distribution cost for the intangibles and therefore marginal cost of the production and distribution is almost nil for these goods. A sale of these goods to a particular customer does not reduce its availability to the other potential customers. Economies of scale arising out of negligible marginal cost, along with network externalities and consumer preference for the already acquired skills, provide natural monopoly power to some of the products in the e-commerce set up. Early birds are thus expected to reap the benefits in these lines of production. Therefore, in the e-commerce environment, monopoly is expected to exist along with the perfect competition. Competition would be especially seen in those areas where goods and services cannot be digitized and economies of scale are not very prominent. Breaking the monopoly power to remain in the competition would require high speed of innovation and making the product visible all the time, whether there is a demand for the products or not. Competition would be basically in the forms of converting ideas, knowledge and brainpower into innovation.

Concluding Remarks

The emergence and rapid growth of Internet and E-Commerce has strong implications on economic and social activities. It is quite possible that these new technologies might transform the future of economic and societal landscape. At the economic front, there is a clear evidence that E-Commerce and Internet technology have positive impact (UNDP, (2003), Pohjola (2000), Dewan and Kramer (2010), Kraemer and Dedrick (2010)). To study the economic implications of e-commerce, few areas of economy (Intermediation, Labour Market, Cost, Price and Competition, and) has been selected. On the basis of various studies it is revealed that e-commerce technology have strong economic implications. At the general level, there are two types of potential economic gains from the use of E-commerce and IT enabled technologies. First, are the gains in efficiency, both in static and dynamic. Static gains are one-time, and come from more efficient use of scarce resources, allowing higher consumption in the present. Dynamic gains come from higher growth, potentially raising the entire future stream of consumption and population. Efficiency gains of e-commerce also come about through the enabling of new digitized goods and services. The second type of potential benefits comes from cost reduction. Studies indicate that e-commerce is helpful in reduction of search cost, administration cost, distribution cost and even the labour costs. However, all these opportunities are yet to materialize into profitability i. e. in agricultural sector, benefits of e-

commerce exists, but, only theoretically; not practically, as the implementation of e-commerce technology in agricultural sector has certain challenges. Added to this, e-commerce based economic models has also posed number of challenges before the concerned people and community. The area of e-taxation is one of the best example and most controversial issue all over the world. As e-commerce transcends the barriers of geographical boundaries, the concept like the place of transactions and place of consumption become immaterial. With the emergence and growth of digital money in the economy, the chances of frauds have also increased. Another most difficult issue is the planning regarding the adoption and implementation of e-commerce technology in the various economic activities. In nutshell, with the e-commerce based economic models, there is little to lose and more to gain.

References

1. Atrostic, B.K. and S. Nguyen (2010), Computer Networks and US Manufacturing Plant Level Productivity: New Evidence from CNUS Data, Centre for Economic Studies, Working Paper, 02-01, US Bureau of the Census, Washington DC.
2. Australian Competition and Consumer Commission (2010), E-Commerce and Competition Issues under the Trade Practices Act, accessed on <http://www.accc.gov.au/content/item.phtml?itemId=259691&nodeId=8e8ee313d99192cc4fdac967bac95253&FN=Discussion%20paper>.
3. David, H. (2008), "Wiring the Labour Market", the Economic Perspectives, Vol. 15, No. 1, pp. 25-40.
4. Avasthi, G.P. and Sharma, Meera (2008), "Information Technology in Banking: Challenges for the Regulations", Prajnan: Journal of Social and Management Science, Vol. XXIX, No. 4, pp. 343-357.
5. Berndt, E.R.; Morrison, C.J. and Rosenblum, L.S. (1992), High Tech Capital Formation and Labour Composition in US Manufacturing Industries: An Exploratory Analysis, NBER Working Paper No. 4010, Cambridge, M.A.
6. Boyle, H. Perry Jr.; Lynn A. Summer and Benjamin Koby (1999), E-Cruiting: From Job Boards to Meta Markets, Thomas Wiesel Partners, and May.
7. Brynjolfsson, E. and Hitt, L.M. (2006), "Paradox Lost: Firm Level Evidence on Returns to Information System Spending", Management Science, Vol. 14, No. 4, pp 23-48.
8. Computer Economics (2010), "Resume Renaissance: Projected Number of Resumes From 2000 to 2003", Internet Marketing and Technology, July 6-7.
9. Criscuolo, C. and K. Waldron (2008), E-Commerce and Firm Productivity, Economic Trends, pp. 52-57.
10. Dedrick, J.; Gurbaxani, V. and Kranemer, K.L. (2008), Information Technology and Economic Performance: A Critical Review and Empirical Evidence, Working Paper Series, Centre for Research on Information Technology and Organizations, University of California at Irvine.
11. Dewan, S. and Kraemer, K L (2009), "Information Technology and Productivity: Evidence from Cross Country Data", Management Science, Vol. 46, No. 4, pp. 548-62.