**International Conference of Science, Engineering & Environmental Technology (ICONSEET), 2(24): 184-192, 2017**
**ISSN 0794-9650**

www.repcomseet.com

# The Role of Information Systems in Global Business

Lawrence Ige Fagbohuun
Department of Marketing, The Federal Polytechnic, Ede, Osun State, Nigeria.
lawrencefagboun@yahoo.co.uk; fagbounlawrence@gmail.com

*Abstract*- **The paper reviews the role of information systems in global business. Information systems are crucial to the growth and development of business in Nigeria and the global world. This paper is a study of the various circumstances surrounding the global business management and the role played by information management in solving managers' daily problems. The paper describes the conceptual issues relating to information systems and how organizations manage their information bank. The paper also provides opportunities to the managers about how to make wise decision based on the application of information systems. The paper further describes some organisations' experiences resulting from the use of information systems and how they benefited from such applications. The paper concludes that information system s represents a combination of management, organisation and technology element; the technology dimension consists of computer hardware, software, data management technology and networking technology. The paper further recommends that each organisation should develop a standard management information systems unit to promote information literacy by combining both computer science and behavioural aspect of management with practical orientation towards developing system solutions to real-world problems and managing information technology resources.**

**Keyword:** ***Business Management, Business Opportunity, Business Transformation, Global Business, Information System and Internet.***

## 1.0 Introduction

It is not business as usual in Europe and America anymore, or the rest of the global economy. In 2006, American businesses spent $1.8 trillion on information systems hardware, software telecommunications equipment. In addition, they spent another $1.7 trillion on business and management consulting and services, much of which involved redesigning firms' business operations to take advantage of these new technologies (Dedrick, Vijay & Kenneth, 2011).
As managers, many will be interested in working for firms that are intensively using information systems and making large investments in information technology. Managers will be interested in knowing how to invest this money wisely. When managers make wise choices, the firm can outperform competitors. Where managers make poor choices, firms will be wasting valuable capital.
This paper introduces managers to the roles that information systems and technologies play in business firms. All firms today, large and small, local and global, use information systems to achieve important business objectives such as operational efficiency, customer and supplies intimacy, better decision making on new products and services.

Avison (2013) noted that business managers will need to know how to use information systems and technologies to help them in their firms resolve to solve problems and overcome challenges. Finance and accounting will need information systems to summarise transactions, organise data and perform financial analysis, human resources or management will need information systems to communicate with employees, maintain employees' records and coordinate work activities. Bautsch (2010) also agreed that manager in information systems will need information system while working with management and other business units and professionals to develop and support new systems that serve the needs of the business. Managers in manufacturing, production, or operations management will need information systems for planning,

forecasting and monitoring production and services. Sales and marketing managers will need information systems for branding, promotions, processing orders and providing customers' services.
The paper is also destined to helping managers make wise investment decisions about information technology and information systems. The experience of organizations described in this paper will help managers learn how to make businesses more competitive, efficient and profitable.

## 2.0 Literature Review and Theoretical Clarification

### Theoretical Clarification

The theoretical review of this paper is found in the smart systems principle of Toyota Motor Corporation. This principles state "that the quality and reliability of an organization are the gold standard of the industry, even among lower prices models, customer loyalty becomes so high that an organisation can make sales without heavy discounting" (Laudon & Laudon, 2007). By organising business processes and information systems around these principles, firms will deliver values to the customers at competitive price. According to Vandervelden (2005) "you can achieve cost reductions and at the same time, make your customers happy through implementation of smarter business processes". Organisations use information systems to support these business processes. Vehicle production is based on actual customer orders rather than 'best guesses' of what to stock in dealer showrooms. Therefore, company will only build auto engines that customers want, when they want them, without additional delays or quality problems.

For instance, Toyota Motor Europe uses a vehicle orders management system based on Oracle E-Business Suite software to reduce the time it takes between placing a customer order and delivering the vehicle to the customer. The software integrates easily with the company's existing systems and also with those of Toyota's independent dealerships and national marketing and sales companies, which run their own separate information systems. A firm will flourish in a highly competitive environment if it creates a set of finely tuned business processes and information systems that can simultaneously promote agility, efficiency and quality. It can respond instantly to customers and changes in the marketplace as events unfold, while working closely with suppliers and retailers (Laudon & Laudon, 2007). As part of effort to monitor quality, efficiency and costs, management must identify the need to use information systems to improve business performance. Technology alone would not be sufficient enough to provide solution to business problems. Organisations has to carefully revise business processes to support a build-to-order production model that based vehicle production on actual customer orders rather than "best guesses" of customers demand. Hence, oracle E-Business software was useful for coordinating the flow of information among disparate production, ordering and invoicing systems within and with systems of retailers and suppliers.

By helping organizations build only the cars customers have ordered, its vehicle order management system reduces inventory costs, because the company and its dealers do not have to pay for making and storing vehicles customers did not want. The system also increases customer satisfaction by making it easier for customers to buy exactly the model, make and option they desire. Information provided by the system helps management monitor trends and forecast demand and production requirements more accurately (Vandervelden, 2005).

## 3.0 Conceptual Review

According to Berskerville and Michael **(**2012**)** an information system is defined technically as a set of interrelated components that collect (or retrieve), process, store and distribute information to support decision making and control in an organization. But, Bebesat and Ropbert (2013) **s**ees information system as a tool which apart from supporting decision making, coordination and control, information systems also help managers and workers analyse problems, visualize complex subjects and create products. In Laudon (1974) opinion, information systems contain information about significant people, places and things within organization or in the environment surrounding it. Laudon posited that information it means data that have been shaped into a form that is meaningful and useful to human beings. Laudon further stated that data, in contrast, are streams of raw facts representing events occurring in organizations or the physical environment before they have been organised and arranged into a form that people can effectively understand and use.

Information systems occur in three stages, input, processing and output. Input captures raw data from within the organisation or from external environment. Processing converts this raw input into a meaningful form. Output transfers the processed information to the people who will use it or to the activities for which it will be used.

Information systems also require feedback which is output that is returned to appropriate members of the organisation to help them evaluate or correct the input stage. However, Laudon (1974) argues that information system cannot be treated with disregard to information technology. Laudon then posited that information technology consists of all the hardware and software that a firm need to use in order to achieve its business objectives. This includes not only computers, printer's handheld personal digital assistants and even iPods but also software, such as the Windows or Linux operating systems, the Microsoft Office desktop productivity suite and the many thousands of computer programmes that can be found in a typical large firm. Greenspan (2010) argued that information systems are more complex and can best be understood by looking at them from both a technology and a business perspective.

Although computer-based information systems use computer technology to process raw data into meaningful information, there is a sharp distinction between a computer and a computer programme on the one hand and an information system on the other. Electronic computer and related software programmes are the technical foundation, the tools and materials, of modern information systems. Computers provide the equipment for storing and processing information. Computer programmes or software, are sets of operating instructions that direct and control computer processing. Knowing how computers and computer programmes work is important in designing solutions to organizations problems but computers are only part of an information system

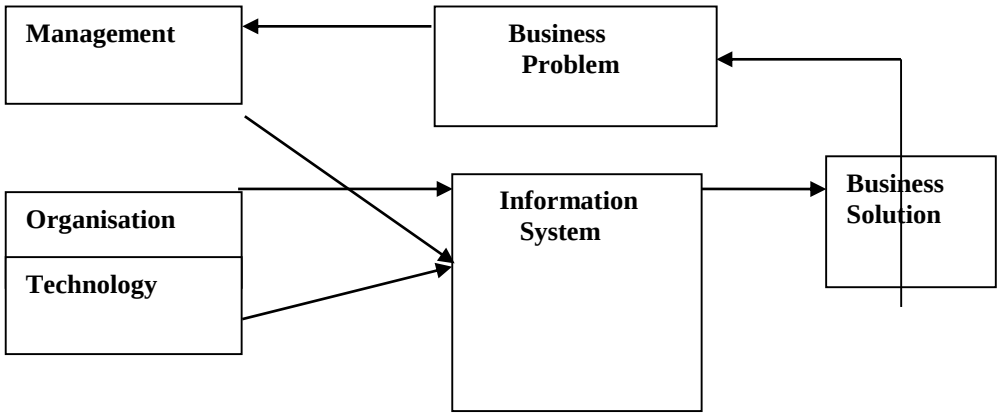


Figure 1 Conceptual Framework
Source: Laudon and Laudon (2005) Information Systems framework

From the above framework, management's decision will include, analysing market trend, monitoring quality, efficiency and cost while organisation's responsibility will include redesign of orders and production processes where necessary. The management in this case can apply production and marketing technology as design by deploying Oracle E-Business Suite software and equally integrate software with internal and third party systems. According to Triplett and Barry (2013) the application of information systems assists the firm to design and produce goods and services to order, forecast demand and production requirements more accurately. This development, if well integrated, will constitute competitive comparative advantage over other firms in the market. Once this is done, Triplett & Barry maintained, a firm will be perfect in having a complete business solution to the entire management's operations, by rolling out productions at reduced costs, that will yield increased revenue and improve customer service while achieving high profitability through efficiency and persistent customer satisfaction In his own contribution,

Teece (1998) asserted that the capability of a firm to solve business problems thus depends on the management's ability to annex technological infrastructure with information systems to neutralise very tough competitive aggression and the difficulties of demanding customers.

This system also encompasses several business processes. It starts with customer selecting a brand and various options. The dealer uses the system to configure a product with all of the selected options in the presence of the customers and then locates the best available brand and options in supply chain, including product scheduled for production in the future. The dealer then uses the system to place order through national distributors who consolidate the order with those of their retailers and place an order through a regional office (Mumford, 2010). Regional offices consolidate orders from national distributors and place orders with the corporate headquarter, for regional factories to manufacture. Each brand is then shipped and invoiced from the factory to headquarters, to national distributors, to retailers, triggering all related accounting processes at each step. National distributors can use the system to monitor their orders and those of different dealers and even "swap" products with various retailers (Pew, 2005).

The production order management system will help organisations reduce production time and cost of maintaining materials and finished products' inventory, while increasing customer service and satisfaction. Teece (1998) asserted that the capability of a firm to solve business problems thus depends on the management's ability to annex technological infrastructure with information systems to neutralise very tough competitive aggression and the difficulties of demanding customers.

## 4.0 Empirical Framework

According to Orlikowski and Stephen, (2011) NASCAR'S model illustrates the importance of data management and database systems for business. NASCAR has experience phenomenal growth. But its future growth and business performance depends on what it can or can't do with its customer data. How business ability to store, organise, and manage their data has tremendous impact on organisational effectiveness. Further illustrating the model, Olikowski and Stephen emphasized that data about NASCAR fans and potential customers had been stored in a number of different databases where they could be easily retrieved and analysed. Management decided that NASCAR'S business strategy needed to focus in creating customer intimacy, which necessitated integrating the data from all their disparate sources into a single comprehensive database.In addition to using appropriate technology, NASCAR had to correct and recognize the data into a standard format and establish rules with its business partners for accessing information.

In Quinn (2016) Hyatl Repercy Osaka (HRO) model also illustrates some of the powerful new capabilities and opportunities provided by contemporary networking technology. HRO used internet and wireless networking technology to provide staff and guests with voice and data communication capabilities as well as wireless internet access all over the offices. This technology enabled HRO to provide superior customer service and made it a hotel of choice, even though its location is somewhat inconvenient because the hotel industry is exceptionally competitive, HRO's management chose a strategy of focusing on a superior customer experience to distinguish it from competitors. Using networks based in the internet protocol and wireless technology saved staff time that was redirected to serving customers, and HRO had to redesign employees' jobs to take advantage of the new technology.

Stiroh (2011) says Procter & Gamble's model of information system use information to restructure its supply chain. This illustrates how information system improve decision making. By improving decision about how to restructure, P&G's supply chain information systems helped the company operate more efficiently, reduce its costs and increase responsiveness to customers and to the market place. P&G management was unable to make good decisions about where to locate plants and distribution centers for new products because P&G supply chain according to Stiroh, was extremely large, complex and affected by many different variables. Bad decision about where to locate plants and distribution centers increased costs to procure, manufacture and warehouse efficiently. P&G solved this problem by implementing new, model based, decision support systems capable of evaluating large quantities of data and thousands of

variables. These systems helped decision makers find an optimal design for P&G's supply chain and improve the attention of supply chain resources.

Similarly, in Sawyer & Allen (2003); Carr (2013) retail firms such as Wal-Mart and Sears and manufacturing firms such as General Motors and General Electric require information systems to survive and prosper. Just like offices, telephones, filing cabinets and efficient tall buildings with elevators were once the foundations of business in the twentieth century. Information technology is a foundation for business in the twenty-first century. Lev (2011) pointed out that information systems today are very essential. Businesses invest so much in information systems and technologies. In the United States, more than 23 million managers and 113million workers in the labour force rely on information systems to conduct business. Information systems are essential for conducting day to day business in the United States and most other advanced countries, as well as achieving strategic business objectives.

The entire sector of the economy will be inconceivable without substantial investments in information systems. E-commerce firms such as Amazon, eBay, Google and E*Trade simply would not exist. Today's service industries, such as, finance, insurance and real estate, as well as personal services such as travel, medicine and education, could not operate without information systems. Similarly, in Sawyer and Allen (2003); Carr (2013) retail firms such as Wal-Mart and Sears and manufacturing firms such as General Motors and General Electric require information systems to survive and prosper. Just like offices, telephones, filing cabinets and efficient tall buildings with elevators were once the foundations of business in the twentieth century. Information technology is a foundation for business in the twenty-first century.

There is a growing interdependence between a firm's ability to use information technology and its ability to implement corporate strategies and achieve corporate goals. What a business would like to do in five years depend on what its systems will be able to do. Increasing market share, becoming the quality or low-cost producer, developing new products and increasing employee productivity depend more and more on the kinds and quality of information systems in the organisation. The more managers understand this relationship, the more valuable they will be. Specifically, business firms invest heavily in information systems to achieve six strategic business objectives: operational excellence, new product, services and business model, customer and supplier intimacy, improved decision making, competitive advantage and survival of business.

## 5.0 Business Transformation through Information Systems

The result of massive spending on information technology and systems allows managers to observe how people conduct their businesses (Marchhand, 2014). More wireless cell phones accounts are being opened than installed telephone land lines. Cell phones, BlackBerry, handhelds, e-mail, online conferencing and international teleconferencing over the internet have all become essential tools of business. On the internet, five million American people purchase one product or the other every day and another nineteen million research different products. The application of information systems enables FedEx in the shipment of millions of packages in the United States, mostly overnight and the United Parcel Service (UPS) moved more than twice the value of FedEx packages as businesses sought to sense and respond to rapidly changing customer demand, reduce inventories to the lowest levels and achieve higher levels of operational efficiency, especially in their supply chains (Stiroh, 2011).

The responsiveness of this new FedEx economy has led many experts to believe the era of massive recession and booms of the typical businesses cycle is over, replaced by much smaller contractions and expansions and strong long term growth. There has been a massive shift in media markets (Pew, 2005). As newspaper readership continues to decline, more than thirty-five million people receive their news online. About thirty-two million Americans now read blogs and eight million write blogs, creating an explosion of new writers and new forms of customer feedback that did not exist five years ago (Pew, 2005). Likewise, e-commerce and Internet advertising are booming. Google's online advertisement revenues surpassed previous records and Internet advertising continues to grow at more than thirty percent per year. New federal security and accounting laws, requiring many businesses to keep e-mail messages for five years, coupled with existing

occupational and health laws requiring firms to store employee chemical exposure data for up to sixty years are spurring the growth of digital information

## 6.0 Business Opportunities in the Global World

Vandervelden (2005) opined that globalisation is the expanding scale, growing magnitude, speed up and deeping impact of transitional flows and patterns of social interaction, shift or transformation in the scale of human organisation that links distant communities and expands the reach of power relations across the world's region and continents. However, Katheryn (2004) argued globalisation as the western powers agenda for the purpose of ensuring a complete and permanent subjugation and exploitation of the less developed countries in all sphere of life, economic, political, cultural etc so as to make them subservient forever. But Carol (2006) considers globalization as a process of increasing international division of labour and the accompanying integration of national economies through trade, goods and services. Carol also believes that it involves a cross-border corporate investment and financial flows.

In this case, business in the global world respects a phenomenon whereby historically districts and separate national markets are becoming one huge global market place with resulting internationalisation of production. Firms securing goods labour and services from different locations around the globe to take advantage of national differences in costs and quality of factors of production such as labour, land, capital, energy and technology and selling to the world as one market. Global business expands economic corporation amongst states and this does not necessarily imply future breakdown of borders. When viewed in the economic perspective, Greenspan (2010) believed that global business does not even require integration of the social and political system. In a more independent world, events abroad rapidly acquire impact at home while development at home had consequence abroad.

Global business is seen as a benefit of technology. Though, this is not a speedy process, despite the rapid increase in global capital and trade flows but it does result in global capital and trade flows but it does result in permanent change in the market affected. It brings huge opportunities for developed responsibilities. Technological innovations have made global expansion of multinationals both possible and desirable with global standardisation coming from the technological revolution and resulting homogeneity of preferences. For the evaluation of the potential benefits and costs of global marketing strategies, it is best used in conjunction with other planning tools in corporate and marketing strategy and focuses in the systematic assessment of a globally coordinated marketing strategy for a specified product or services. A growing percentage of the American economy and other advanced industrial economies in Europe and Asia depend on imports and exports. Foreign trade, both exports and imports, account accounts for more than twenty-five percent of the goods and services produced in the United States and even more in countries such as Japan and Germany.

From the study of Hacki and Julian (2010); Budajaraman (2006) the emergence of the internet into a full-blown international communications system has drastically reduced the costs of operating on a global scale. Customers now shop in a worldwide marketplace, obtaining price and quality information reliably. Firms can achieve extraordinary cost reductions by finding low-cost supplies and managing production facilities on other countries. Digital content firms that produce movies are able to sell millions more copies of DVDs of popular films by using foreign markets. Internet service firms, such as Google and e-Bay, are able to replicate their business models and services in multiple countries without having to redesign their expensive fixed-cost information systems infrastructure.

To Lev (2011) the internet has to be recognized not for what it is at present but for the potentials it presents. For the first time, location is not important, only good communications. According to Lev, business can operate literally anywhere, far distant even from the majority of its customers provided all important parts of what we may call customer service are fulfilled. The internet has produced at the moment, a few isolated success stories of small companies in remote areas, now finding that they are prospering through being able to offer their specialised services to a much greater and wider customer base than ever before and that has come around simply because of the internet. Customers learn about products and services on the internet

through the home pages which companies create and through word of mouth. This is equal to a shop window in the traditional sense but with a very important difference.

Lee (2013) further concludes that the internet allows services correspondence and trading to take place in a nonphysical realm. Lee added that the term "cyber space" was coined to describe this domain of computer communication, a world in which physical boundaries become irrelevant, a world in which tiny, back-street shop can market and sell to customers throughout the globe. Initially, the internet was available in English but most of the world's major languages can now be accommodated and it is now possible to compose a message in one language and transmit it via the internet into the language of the recipient.

## 7.0 The Role of Digital Network Connection in Business Management

All the changes that have occurred to contemporary business, coupled with equally significant organisational redesign, have created the conditions for a fully digital firm. A digital firm can be defined along several dimensions. According to Carol (2006) a digital firm is one in which nearly all of the organisation's significant business relationships with customers, suppliers and employees are digitally enabled and mediated. Core business processes are accomplished through digital networks spanning the entire organisation or linking multiple organisations. According to Lamb, Steve and Rob (2014) business processes refer to the set of logically related tasks and behaviours that organisations develop over time to produce specific business results and the unique manner in which these activities are organised and coordinated. Developing a new product, generating and fulfilling an order, creating a marketing plan and hiring an employee are examples of business processes and the ways organisations accomplish their business processes can be a source of competitive strength.

Jorgenson (2011) emphasized key corporate assets such as intellectual property, core competencies and financial and human assets are managed through digital means. In a digital firm, any piece of information required to support key business decisions is available at anytime and anywhere in the firm. Digital firms sense and respond to their environments far more rapidly than traditional firms, giving them more flexibility to survive in turbulent times. Digital firms offer extraordinary opportunities for more flexible global organization and management. In digital firms, both time shifting and space shifting are the norm. Time shifting refers to business being conducted continuously on regular basis rather than in narrow work day time bands. Space shifting means that work takes place in a global workshop as well as within national boundaries. Work is accomplished physically wherever in the world it is best accomplished.

These features are exemplified in the case of Toyota Motor Company. Electronically integrating key business processes in vehicle ordering and inventory management has made this company much more agile and adaptive to customer demands and changes in its supplier and dealer network. A few firms, such as Cisco Systems or Dell Computers are close to becoming digital firms, using the internet to drive every aspect of their business. Most other companies are not fully digital but they are moving toward close digital integration with suppliers, customers and employees (Ian, (2004; Brynjolfsson, 2013; Brynjolfsson & Lorin, 2010). The Interactive Session on Organisation describes another example. Accenture is a global consulting services and outsourcing firm with over 129,000 employees serving clients in forty-eight countries. It has no operational headquarters and no formal branches, encouraging its employees to work on site with its clients. Managers use e-mails, phones, the Web and other information technologies to manage virtually, often while they are traveling themselves (Galliers & Mauren, 2013).

## 8.0 Appraisal of Reviewed Literature

Literature revealed that business managers will do better if they are responsive to technological changes that can result to improved information systems. Information systems are therefore important in global business networking. Managers must have knowledge of how to use information systems and technologies to help them in their firm's resolve to solve problems and overcome challenges. Managers in information systems require information system while working with management and other business units and professionals in order to develop new systems that serve the needs of the business. Information systems are required in manufacturing, production, or operations management for planning, forecasting and monitoring

production and services. Sales and marketing managers also need information systems for branding, promotions, processing orders and providing customer services.

Concept of information systems was seen as triple action process, the input, process and the output. Based on the data in US Department of Commerce, Bureau of Economic Analysis, information technology capital investment defined as hardware, software and communications equipment has been growing over the years. Multinational organizations like Toyota Motor Corporation, Cisco, FedEx, United Parcels Limited, Wal-Mart and JCPenny have achieved tremendous sales turnover and profit earnings simply because of continuous development of information technology and systems development. Because human effort has been drastically reduced and substantial costs removed through the elimination of physical distance, information systems may predicate such problems as workers feeling bogged down. However, managers can always make occasional visit to work sites to meet with them. Personal contact is especially useful when sensitive personnel matters must be addressed or when employees need extra motivation and encouragement during hard times.

It was also revealed that, there is a growing interdependence between a firm's information systems and its business capabilities. Business firms invest in information systems and technologies because they are necessities of doing business. However, sometimes, these necessities are driven by industry-level changes. Information systems have improved business opportunities in the global world. Businesses continuously seek to improve the efficiency of their operations in order to achieve higher corporate profitability. Information systems and technologies are some of the most important tools available to managers for achieving higher levels of efficiency and productivity in business operations, especially when coupled with global changes in business practices and management behavior.

## 9.0 Conclusion and Recommendations

Information systems are a foundation for conducting business today. In some industries, survival and even existence is difficult without extensive use of information technology. Information systems have become essential for helping organisations operate in a global world. From a technical perspective, an information system collects stores and disseminates information from an organisation's environment and internal operations to support organisational functions and decision making.

An information system represents a combination of management, organisation and technology element. The technology dimension consists of computer hardware, software, data management technology and networking technology. An information system is part of a series of value-adding activities for acquiring, transforming and distributing information to improve management decision making, enhance organisational performance and ultimately increase profitability. The study of information systems deals with issues and insights contributed from technical and behavioural discipline. Information systems literacy requires an understanding of the organisational and management dimensions of information systems, as well as technical dimensions addressed by computer literacy.

The following recommendations were made to assist managers of information technologies.
Organisations should embrace information technologies and information systems.
Management should encourage information systems literacy in organisations.
Each organisation should develop a standard management information systems unit to promote information literacy by combining both computer science and behavioural aspect of management with practical orientation towards developing system solutions to real-world problems and managing information technology resources.
Further research and development about information technologies and systems should be funded to give way to further technological advancement and improvement on global information networking.

**References**


[1] Avison, D. (2013). Information Systems in the MBA Curriculum: An International Perspective. Communications of the AIS, 6(2), pp 223-275

[3] Bebasat, I. & Ropbbert, W. (2013). The identity Crises within the IS Discipline. MIS Quarterly, 27(2), p 1232.

[4] Berskerville, R. & Michael, D. (2012). Information Systems as a Reference Discipline. MIS Quaterly, 26(1), pp 345-400.

[5] Brynjolfsson, E. & Lorin, M. (2010). Beyond CompuTATION: Information Technology, organizational Transformation and Business Performance. Journal of Economic Perspective, 14(4), pp 235-324.

[6] Brynjolfsson, E. (2013). The IT Productivity Gap. The Optimize Magazine, 21(7), p22-45.
888888 (2006). National Income and Product Accounts. New York: Department of Commerce.

[7] Carol, H. (2006). Have Advice, Will Travel. Wall Street Journal, 3(6), pp 34-66

[8] Carr, N. (2013). IT Doesn't Matter. Harvard: Harvard Business School.

[9] Dedrick, J., Vijay, G., & Kenneth, L. (2011). Information Technology and Economicx Performance. Irvine: University of California.

[10] Galliers, R., & Mauren, M. (2013). A Discipline divided: Globalisation and Parochialism in Information Systems. Communications of the MIS, 5(6) pp 765-790 .

[11] Greenspan, A. (2010). The Revolution in Information Technology. Boston: New Economy.

[12] Hacki, R. & Julian, L. (2010). The Future of Networked Company. *Mc Kinsey.* 3(2), pp 234-321.

[13] Ian, R. (2004). No Traffic Ahead of Toyota. Business Week, February, 26th

[14] Jorgenson, D. (2011) Information Technology and Economic Performance: A Critical review of Empirical Evidence. Irvine: University of California.

[15] Katheryn , P. (2004). Ready to Roll. Profit Magazine may 26th pp24-55

[16] Lamb, R., Steve, S., & Rob, K. (2014). A social Informatics Perspective on Socio-Technical Networks. Hawaii: New Educational Publishers.

[17] Laudon, K. & Laudon, J. (2007). Management Information Systems. New Jersey: Pearson Education International.

[18] Laudon, K. (1974). Computers and Bureaucratic Reform. New York: John Wiley and Sons.

[19] Lee, H. (2013). Broad band and Mobile Opportunities: A Socio-Technical Perspective. Journal of information technology. 18(3), pp 23-37.

[20] Lev, B. (2011). Intangibles: Management Measurement and Reporting. Irwin: The Brookings.

[21] Marchand, D. (2014). Extracting the Business Value of IT: Journal of financial transformation, 6(3), p345-356.

[22] Mumford, E. (2010). Socio-Technical Design in opportunities. London: Chapman-Hall.

[23] Orlikowski. W. & Stephen, R. (2011). Technology and Institutions. MIS Quarterly, 25(2), p 356.

[24] Pew, L. (2005). Trends 2005. Chapter 4: Internet: Mainstreaming of online life. Research Center, 25(2) pp 89-102.

[25] Quinn, F. (2016). eBusiness Evangelists: An Interview with Erik Brynjolfsson. Supply Chain Management

[26] Review, 5(4), PP 348-421.

[27] Sawyer, S. & Allen, J. (2003). Broadband and Mobile opportunities: A Socio-Technical Perspectives. Journal of Information Technology, 18(2) p 98-109.

[28] Stiroh, K. (2011). The Economic Impact of Information Technology. New York: Reserve Bank.

[29] Teece, D. (1998). Economic Performance and Theory of Firms. London: Edward Publishing.

[30] Triplett, J. & Barry, P. (2013). Productivities in Industries: Washington: The Brookings.

[31] Vanderveld, L. (2005). Annual General Meeting. Osaka: Toyota Information Unit.