Future of Commerce in An Environment of Evolving Technology

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Abstract:*The evolution of commerce and trade has been marked by the progress of civilization or in other words progress of civilization has been marked by growth of business and commerce. Human endeavors have been for futuristic progress and evolution of systems of Trade, Commerce and communication. From the days of barter system, businesses have been transformed by technological developments, particularly the Digital progress in computation and devices. Man has evolved various systems for faster trade and convenience of doing at environments conducive to doing business. Technological advancement has seen the advent of computers, laptops, handheld devices and communication through web and internet. The present environment has been characterized by geographic dispersal of businesses and the speed with which business transactions are concluded. Technological tools have helped in the evolution of commerce, the electronic commerce in particular. In fact the name itself is derived from the large scale use of electronic media for trade and commerce. The present article is to focus on the futuristic trends in commerce and the evolving technology. The research has been made interesting by the fact that systems of commerce have been tremendously influenced by the evolving technology and the environment and influence on human lives.*

Key Words:*Future of commerce in an environment of evolving technology, the influence of technology on human lives in general and commerce in particular.*

I. INTRODUCTION

Over past decades, the pace of technological progress has plunged business into a state of permanent flux, with a constant stream of innovations challenging and changing long-established models, markets and processes. New businesses have sprung up while existing ones have faltered and some have disappeared. This uncertain and rapidly changing environment offers many new opportunities for business leaders but it also poses challenges, and no influence is greater than the need to drive growth. With the landscape constantly changing, how can businesses be sure they are taking the right direction? Technology-driven change isn't going to go away. On the contrary, it is going to accelerate, and businesses will have to adapt to survive and thrive. This shifting business landscape can be daunting but the opportunities for growth are enormous and success will go to enterprises that manage to be agile and creative.

It is all too easy for business leaders to be dazzled by the latest fashions in technology and seek to follow every new trend. The result is that they end up trying to do everything, but do nothing well. In an era of constant and rapid change, you need a clear-eyed focus on how technology can help you deliver.

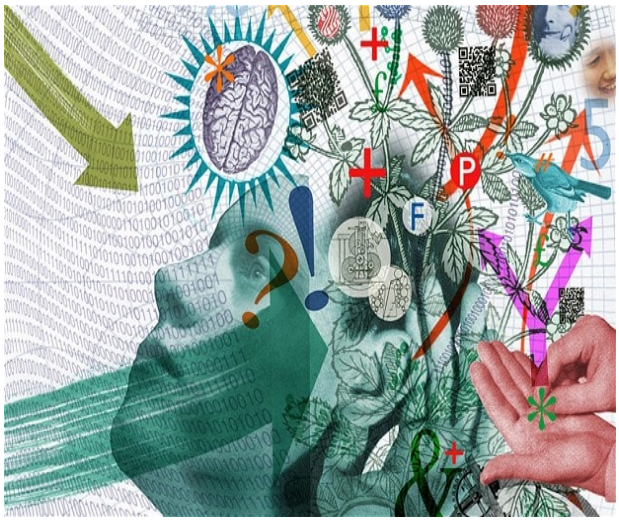

Figure 1: Constant and rapid changes in Technology present businesses and Commerce with challenges and opportunities

Businesses that have relied on individuals or teams of experts to take key decisions are finding that intelligent analysis of big data is a far more robust and reliable guide. Amazon is perhaps the most striking example of a business that has used technology to reinvent entire categories of the retail business including books, music and electronics. Its recommendation system – which uses vast amounts of data about customer behavior to suggest the products that individuals might like to buy – has been fundamental to its success. Over the next few years we will witness big data bringing similar revolutions to many other sectors. The pace of change can seem breathtaking but it could be many more years before the implications of a major technological advance are fully felt in business and society.

II. METHODOLOGY AND OBJECTIVES

Current business environment is characterized by growth of electronic commerce. We have come a long way from the barter system to the present systems of electronic trade. In every generation Trade is characterized by the system in vogue and preferred by the generation. Today most of the trade s conducted through electronic media and this trend seems to continue. Present research is to find out the

reasons for this and future trends in Commerce that are indicated by present generation of transformations. With this in view the following specific Objectives have been identified for the completion of this research paper.

1. Evolution of Trade and commerce and the prevailing business environment.
2. To find out if environment influences systems of trade and commerce.
3. A critical review of Impact of Technology on Commerce.
4. Impact of technology and commerce on business.
5. Recommendations for future analysis and study.

Since the study and research involves electronic commerce and media, the available information and data have been compiled from Web pages and internet. In fact the internet provides access to unlimited information on electronic commerce and its future impact on business environment. With this in view the above objectives have been identified and data compiled to find out satisfactory answers to research problems and questions. Needless to say, suitable answers have been indicated through data analysis and review of literature to arrive at the conclusions.

III. REVIEW OF LITERATURE

A visionary idea needs to be understood, accepted and experimented with. This is a process that can go on for many years as individuals and businesses learn more about the potential of a new Technology, make more demands of it and come up with ever more creative ideas for its use. The availability of big data and the tools that allow us to interrogate and manipulate it are relatively new, so I think we are still a long way from seeing them used to their full potential. Products will be in a constant state of evolution as companies respond to market changes in the longer term, big data has the potential to drive massive growth by revolutionizing almost any product-development process. Companies will be able to put products through cycles of testing and redevelopment at much greater speed than is currently possible, using techniques like multi-variant testing. This is when large numbers of subtly different variants of the same product are prototyped or even brought to market to see which features improve performance or are most liked by the public. What previously took months will take seconds.

Business schools teach us to be logical and methodical, but the truth is we're not as rational as we'd like to think. Executives need to make thousands of decisions and speed is important, so we take short cuts, relying on rules of thumb to fill in the gaps in our data. In other words, we often extrapolate, using personal experience to make common sense judgments. The problem is that today's business environment is fraught with S-curves and digital laws, not the step-by-step linear advance that we experience on a journey in the physical world. What's driving the change is the increasing informational content of our products and services. We used to operate in an economy of atoms, in which value was created by transforming matter and energy. Now, value is often created by design through information driven technologies like CAD, 3-D printing and genomics. In the future, all technologies will essentially become information technologies, including energy. So exponential rates of progress will increasingly become the norm.

Over the last 10 to 15 years, technology has drastically changed the attitude and processes of the workplace. More importantly, the continued evolution of telecoms and IT technology is fuelling the on-going transformation of the business environment to take advantage of available tools and opportunities. In a fully automated age, the only truly valuable asset will be the human spirit. The continuous evolution of technology is changing the way do business, the dynamics of the workplace and what we perceive is possible. We are still at the beginning of a data revolution in which the continuous growth of computing power has made vast amounts of information available and is providing the tools with which to analyze it. This information may be about consumer behavior, the marketplace or pricing trends. More than competitive effort future success will depend on the proactive collaboration and creative power. Technology allows this sort of development work to be carried out with relatively low amounts of effort and it will allow companies to discover which products really work in their markets far more rapidly than has been the case. Products will be in a constant state of evolution as companies respond at speed to changes in market conditions.

The internet, by giving entrepreneurs instant access to billions of people worldwide, has allowed businesses such as Google, Amazon, eBay and Face book to see rates of growth, which would have been unimaginable in previous eras. The message is clear. As technological change continues, the potential for growth will accelerate. Collaborative efforts to pool the resources and develop strategic advantages are essential. The businesses that succeed will be those with the foresight to see the potential that new technology offers and the speed to adapt and take advantage of it. It's become clear that technology shifts can radically change time-honored business principles. Today, the as technology continues to evolve, we need to take note of the changes that affect our businesses and lives.

Banks used to be situated in large, ornate buildings that radiated size and power. The idea was that scale meant

safety. Doing business with a big company meant that you could be sure that they would be around next week and could stand by their promises. In those days, no one ever got fired for buying IBM. That was then, this is now. Industrial era giants like Kodak and US Steel have faltered. GM and Xerox suffered near death experiences. Their scale provided little insulation from market forces. Meanwhile, companies like Google, Face book and Instagram spring up out of nowhere, becoming billion dollar companies overnight. That's the essence of the new semantic economy. Upstarts can get access to resources that used to be available only to large ones. Whether it's infrastructure in the cloud, outsourced manufacturing or capital from angels and crowd funding, very few industries still have significant barriers to entry.

In the industrial age, a company's business model didn't change much. The way a firm would create, deliver and capture value could stay fairly constant for generations. The practice of management was mostly focused on execution. If you could move men and material efficiently, buy for a dollar and sell for two, you'd be successful, sometimes enormously so. We have come to expect a number of upheavals in any given industry during the course of a career or even a decade. With scale advantages disappearing, no one is immune. We all have to adapt. What's more, the process is accelerating. As technological cycles compress and planning cycles struggle to keep up, we need to experiment more and plan less. This is creating a strategic shift where strategy becomes more emergent, collaborative and Bayesian.

Way back in 1969, Peter Drucker predicted the oncoming of a new age, which he called the knowledge economy, where managers would have to supervise subordinates who had expertise that they themselves lacked. One of the key ramifications that he foresaw was that we'd have to treat almost everyone as if they were a volunteer. No amount of monitoring and auditing can suffice. Control becomes a dangerous illusion in a knowledge economy. Business moves too fast and is too complex for rules and regulations to drive competent performance. The lunatics run the asylum, the best that managers can do is help them run it right.

Figure 2: Picture showing accelerated growth due to Technological innovations

While there is no lack of discussion about the digital age, I am not sure that we have fully accepted the consequences of the transition from atoms to bits. It's not just that technology is moving faster, the rate of change is actually accelerating and that alters the logic by which we need to operate. Our intuition and experience lead us to assume a much slower pace. Further, as the informational content of products and services increases, the economics change. While material and energy costs become less important, the information component is becoming more exponentially more efficient. We've seen this in computer hardware and software, but now we're seeing it in life sciences and even manufacturing. Everywhere you look, efficiency is being automated. From robots in factories to pattern recognition software that automates analytical tasks, machine capabilities are replacing human ones in every area except one: our ability to interact with each other. That's the essence of the new passion economy.

Technological changes affect almost every part of our lives. Thanks to the advances in communication and computer science, nearly anything you can imagine is only a few clicks away. Making a video call to your parents living overseas, for instance, or watching a movie with a mobile device even when you are travelling is possible with the technology that we have today. Besides these changes in our personal lives, technology has also changed the face and the pace of how we do business. Business processes have been modified and organizations are now working much more efficiently than ever. At the same time, technology has opened a new way of communication, allowing businesses to communicate and collaborate beyond borders. It is for sure that the technology has changed organizations in an astonishing way. Mobile devices like smart phones and tablets combining with the power of internet have revolutionized the way we work. E-mail communications have replaced nearly all written memos, phone calls, and faxes. Smart

phones and tablets can connect you to your business network while you are out of the office, allowing you to respond quickly. Storing the important files on a cloud computing system rather than your PCs, for instance, has made information easily accessible at anytime and anywhere.

Also by the help of technology, virtual organizations are now a reality. The Internet has allowed businesses to create geographically apart teams to work like a single, unified organization. Video and conference calling, cloud computing, and all instant messaging tools have simplified business processes. The result is greater productivity and efficiency in many cases.

Figure 3: Technology can overcome geographic distances.

In many developing countries, there can still be a tension between the traditional practices and the improvements that can be realized through technology. One of the reasons for this standoff might be that decision makers still have not fully appreciated the irrevocable changes that technology had brought to the workplace. Following is a suggestion of key ways in which technology is changing the way we do business.

1. Productivity. One of the early driving forces supporting the take up and use of computers were assertions that increased productivity could be realized, thus allowing us more time to attend to do other things. Indeed, the use of computers has transformed the workplace as we know it. It has driven down the cost of data processing, and the ease with which large volumes of data can be manipulated by and transferred between various units within the organization. Moreover, this increasing processing power, along with the broad range of off-the-shelf and customized hardware and software that are available, have resulted in changing employer and client expectation of work quality and throughput both at the employee and organizational levels.

2. Collaboration. In situations where persons might not be in office physically, e.g. due to networking arrangements or offsite work assignments, and even to interact with clients, technology is offering a number of connectivity options that facilitate continued discussion and collaboration among work teams. Options can allow for real-time or non-real time interaction, and can also be integrated into specialist workspaces to allow access to and use of different tools and features. The word cloud below shows only a small sample of the collaboration tools that are available.

Figure 4: Sample of collaboration tools that are being used in the workplace

(Source: ICT Pulse)

3. Resourcing. Apart from the impact technology has been having on productivity, it is also changing the way businesses are resourced. Two key examples of this are

- Cloud computing, which allows a broad range of resources, such as software applications, hardware and infrastructure requirements, such as storage and processing power, to be accessed online, and
- Outsourcing, where, thanks to technology, companies can devolve or delegate different aspects of their business to either affiliate or third parties, but still remain connected and have critical inputs to processes that have remained in-house.

These two examples highlight the changing view on how operating resources are deployed and managed, and more importantly where such activities occur – e.g. online, offsite and even offshore. Hence business models have been changing on the basis that it is no longer necessary for the supply of many of those needs to be resident in-house; but they must be accessible as and when required, which current technology does facilitate.

4. Interaction and participation. This point is readily evident through the impact of social media in business. In addition to the providing organizations with another platform for marketing and promotion, and to disseminate information, social media offers consumers and the public a large, a real time voice. Many organizations are beginning to capitalize on the opportunities to secure

feedback on their products and services, and even to use the collaborative environment that technology now fosters for crowd sourcing_initiatives, such as crowd creation, crowd voting and even crowd wisdom.

5. Cost management. Invariably, increasing competition is fostering an ever-growing need to manage cost and streamline operations. Management is constantly being asked to get the most out of every rupee spent, and in these trying economic times. Once again, technology is providing cost-effective alternatives, such expertise/ labor and computing resource outsourcing, and also with respect to in-house solutions that can improve the efficiency, productivity and performance of the individual employee, and ultimately, that of the organization.

6. Efficiency and Optimization. Finally, since there is a greater thrust towards organizations becoming more streamlined. Traditionally, one of the greatest challenges that businesses have faced is that although they might be very clear about what their core objectives might be, considerable attention – financing, manpower, management, etc. – had be given to supporting activities and processes to the core business. However, thanks to technology, companies have more options through which to reallocate their efforts towards critical processes and functions that they must manage, thereby increasing productivity and outputs.

While we are discussing about technology and its components that help businesses to change how they progress, we need to emphasize a few words about cloud computing as well. As many of us know, using the cloud systems brings numerous advantages and benefits for organizations and help to maintain competitive advantage over their rivals. Reducing the costs, being more responsive to the customers, increasing the scalability and flexibility are some of the advantages which are easily attained. So, by the help of the cloud nearly everything, even *the business itself* can change significantly.

Figure 5: Impact of cloud computing

Your technology – everything in your office from physical devices to information networks – has an incredibly transformative influence on your business world and economy. Not only does your technology impact the smallest details of day-to-day business operations by increasing the productivity of workers and investments, accelerating economic activity, promoting interdependence between industries, and allowing for the continual deployment of new technologies, it has also changed consumer preferences and reshaped the way businesses produce and market their goods. Quite simply the future is mobile. There is no denying the mobile revolution is here and doesn't look like slowing down. Once upon a time you would be asked to switch your mobile phones off…not anymore, organizations want you switched on and connected all the time. Mobile devices don't just mean the smart phone alone, though, as the name suggests it is any portable device.

IV. ANALYSIS OF DATA AND FINDINGS

According to a recent global survey, which examined the working habits of 3,000 knowledge workers worldwide, more than 66 per cent of respondents positively endorsed networking as a newly adopted attitude and practice in their organizations. In this digital, mobile environment, productivity applications married to communications services deliver a complete, integrated toolset that enables better employee collaboration regardless of time or location. Conventional Trade and business practices are no more suitable in the digitalized work environment of today. With Technological innovations Speed and connectivity have seen the rise of the mobile Apps and they are here to stay.

The environmental factors which influenced such a dramatic change are work and business culture. Competition – technology moves very quickly in a constant evolution that creates new devices and faster systems. Businesses must take note of these changes and attempt to keep up with technology, adapting it to their present and future needs while also watching what their competitors are utilizing. While the end result is an increase in the evolution of technology and its application to business, it can be very costly for a small business to try to keep up with the latest and greatest hardware or soft ware out there

Productivity – new technology has driven down the cost of data processing, and increased the ease with which large volumes of data can be manipulated by and transferred between various units within an organization. Additionally, this increased processing power, along with the broad range of off-the-shelf and customized hardware and software that are available have resulted in changing employer and client expectations of work quality and throughput both at the employee and organizational levels. Collaboration has resulted in networking and more and

more cloud computing. Attitudes towards work and progress are changing.

The impact of such technologies has been dramatic and the environment of business is changing. Today the customers do not have to wait for an invoice or credit note as the transfers are on real time mobile and mobile computer and telephone devices. Everything is instantaneous and automatic. There is seamless communication and contact between a customer and supplier and no time is lost. As mentioned earlier exponential rates of growth become the norm and not an exception.

"The changing work patterns of users and the increasing need for a better work-life balance are greatly influencing the progression towards an intelligent workplace", driven by mobile technology. Thanks to new flexible working practices, employees are able to skip the long commute and still maintain the same level of productivity remotely. Clearly businesses are interested in creating more connected, intelligent workers through technology that follows, learns and engages.

This prominent shift in work-based practices and the harnessing of new technologies offers huge appeal for organizations looking to advance and make improvements. In response to the changing pattern of today's global business environment, the impact of collaboration technology as a key driver for improved efficiency and productivity for the "workplace of things". Information content of businesses is becoming more important than products and processes. Global trade liberalization and technological advancements have opened up the domestic and international markets. Trade liberalization is elimination of trade barriers that previously hindered free trade in international markets. These transformations of the business environment, coupled with the widespread use of e-commerce, have enabled small businesses to access local, regional and global markets. The success of e-commerce organizations depends on prevailing economic conditions in target markets.

V. CONCLUSION & RECOMMENDATION

In this mobile-first world, tech-savvy employees have pioneered the ubiquitous trend of bring your own device (BYOD) which has forced chief information officers to sit up and take notice. With nearly 94 per cent of all companies offering BYOD strategies, it is predicted that 30 per cent of these will leverage personal applications, data and social connections for enterprise purposes by 2016.Given the rise in this trend, IT managers must proactively plan to integrate flexible working into their unified communications and collaboration (UC&C) strategies. As a result, the most innovative IT business leaders are relentlessly engaged across all business functions in creating the optimal collaboration environment founded on new mobile applications, cloud-based meeting tools and more flexible working practices or what is known as the "workplace of things".

The author would like to recommend to researchers, academicians and practitioners that the mobile and computing hand held devices are the future potential areas for research studies and how society can benefit from new applications of technology.

BIBLIOGRAPHY

[1] Arthur, W. B. (1996). Increasing Returns and the New World of Business. Harvard Business Review (July/August), 100–109.

[2] A Review of automation and robotics for the bio-industry. Journal of Biomechatronics Engineering Vol. 1, No. 1, (2008) 37-54

[3] Amidon, Debra M.; Formica, Piero; Mercier-Laurent, Eunika, eds. (2005). Knowledge Economics: Principles, Practices and Policies. Tartu University Press.

[4] Bell, D. (1974). The Coming of Post-Industrial Society: A Venture in Social Forecasting. London: Heinemann.

[5] Böhme, Gernot; Stehr, Nico (2012). The Knowledge Society: The Growing Impact of Scientific Knowledge on Social Relations. Springer Science & Business Media. ISBN 9789400947245. Retrieved 27 March 2017.

[6] Bloomfield, Masse (1993). The Automated Society; A View of the Distant Past, the Present and the Far Future. Masefield Books. ISBN 1879981025. Retrieved 29 March 2017.

[7] Ben Armentrout, and Heidi Kappes. Studies in Closed Ecological Systems: Biosphere in a Bottle

[8] Drucker, Peter (1969). The Age of Discontinuity; Guidelines to Our Changing Society. New York: Harper and Row.

[9] International Congress on Innovation and Technology XXI: Strategies and Policies towards the XXI Century, & Soares, O. D. D. (1997). Innovation and technology: Strategies and policies. Dordrecht: Kluwer Academic.

[10] Machlup, F. (1962). The Production and Distribution of Knowledge in the United States. Princeton: Princeton University Press.

[11] Porter, M. E. Clusters and the New Economics of Competition. Harvard Business Review. (Nov-Dec 1998). 77-90.

[12] Powell, Walter W. & Snellman, Kaisa (2004). "The Knowledge Economy". Annual Review of Sociology 30 (1): 199–220

[13] Rooney, D., Hearn, G., Mandeville, T., & Joseph, R. (2003). Public Policy in Knowledge-Based Economies: Foundations and Frameworks. Cheltenham: Edward Elgar.

[14] Rooney, D., Hearn, G., & Ninan, A. (2005). Handbook on the Knowledge Economy. Cheltenham: Edward Elgar.

[15] The Brookings Institution. Metro Policy: Shaping A New Federal Partnership for a Metropolitan Nation. Metropolitan Policy Program Report. (2008). 4-103.

[16] Smith, Keith (2002). *"What is the 'Knowledge Economy'? Knowledge Intensity and Distributed Knowledge Bases"* (PDF). Discussion Papers from United Nations University, Institute for New Technologies, No. 6.

[17] Powell, Walter W.; Snellman, Kaisa (2004). "The Knowledge Economy". *Annual Review of Sociology*, **30** (1): 199–220.

[18] Blomström, Magnus; Kokko, Ari; Sjöholm, Fredrik (2002). *"Growth & Innovation Policies for a Knowledge Economy. Experiences from Finland, Sweden & Singapore"* (PDF). Working Paper 156, Archived from *the original* (PDF) on 2014-12-22.

[19] *Dutta, Soumitra, ed. (2012).* "The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth" (PDF). INSEAD. Archived from *the original* (PDF) on 2013-04-18.

[20] Porter, Michael E. (1998). *"Clusters and the New Economics of Competition"* (PDF). *Harvard Business Review*. December: 77–90.

[21] UNCSTD (1997). United Nations Commission on Science and Technology for Development. Report of the Working Group on ICTs for Development prepared for the 3rd Session. 12 May, Geneva, Switzerland.

[22] McManamon P.F.; et al. (15 May 1996). "Optical phased array technology". Proceedings of the IEEE, Laser radar applications. IEEE. 84 (2): 99–320. Retrieved 29 April 2011.

[23] "Now, a mobile phone that can smell". The Times of India. 7 November 2011. Retrieved 4 December 2011.

[24] "Remapping Computer Circuitry to Avert Impending Bottlenecks". The New York Times. 28 February 2011. Retrieved 27 April 2011.

[25] Faunce TA, Lubitz W, Rutherford AW, MacFarlane D, Moore, GF, Yang P, Nocera DG, Moore TA, Gregory DH, Fukuzumi S, Yoon KB, Armstrong FA, Wasielewski MR, Styring S. (2013), Energy and Environment Case for a Global Project on Artificial Photosynthesis. Energy and Environmental Science

[26] Kraytsberg A, Ein-Eli Y (2011). "Review on Li-air batteries - Opportunities, limitations and perspective". Journal of Power Sources, 196:p.886-893.

[27] "Smart Grid Costs Are Massive, but Benefits Will Be Larger, Industry Study Says". The New York Times. 25 May 2011. Retrieved 4 March 2012.

[28] World Economic Forum's Meta-Council on Emerging Technologies (2016). "Top 10 Emerging Technologies of 2016" (PDF). World Economic Forum. Retrieved 21 September 2016

[29] "Mobile Video Collaboration System Securely Connects Field Staff and Experts". Electronic Component News. 28 March 2011.

[30] "New hand-held device targets work on shop floor: veteran high-tech team launches new venture". Winnipeg Free Press. 11 July 2005.

[31] Sharon Gaudin (2 April 2014). "U.S. Navy to test humanoid robotic firefighters". Computerworld.

[32] "Airless Tire Promises Grace Under Pressure for Soldiers". Scientific American. 11 August 2008. Retrieved 6 December 2011.

WEB REERENCES

[1] http://pubs.rsc.org/en/content/articlelanding/2013/ee/c3ee00063j

[2] endoftheamericandream.com.