

Emerging Trends in Information Technology

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Abstract

21st century has been defined by application of and advancement in information technology. Information technology has become an integral part of our daily life. According to Information Technology Association of America, information technology is defined as “the study, design, development, application, implementation, support or management of computer-based information systems.” Information technology has served as a big change agent in different aspect of business and society. It has proven game changer in resolving economic and social issues. Advancement and application of information technology are ever changing. Some of the trends in the information technology are as follows: **Cloud Computing:** One of the most talked about concept in information technology is the cloud computing. Clouding computing is defined as utilization of computing services, i.e. software as well as hardware as a service over a network. Typically, this network is the internet. Cloud computing offers 3 types of broad services mainly Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). Some of the benefit of cloud computing is as follows: Cloud computing reduces IT infrastructure cost of the company. Cloud computing promotes the concept of virtualization, which enables server and storage device to be utilized across organization. Cloud computing makes maintenance of software and hardware easier as installation is not required on each end user’s computer. Some issues concerning cloud computing are privacy, compliance, security, legal, abuse, IT governance, etc. **Mobile Application:** Another emerging trend within information technology is mobile applications (software application on Smart phone, tablet, etc.) Mobile application or mobile app has become a success since its introduction. They are designed to run on Smartphone, tablets and other mobile devices. They are available as a download from various mobile operating systems like Apple, Blackberry, Nokia, etc. Some of the mobile app are available free where as some involve download cost. The revenue collected is shared between app distributor and app developer. **User Interfaces:** User interface has undergone a revolution since introduction of touch screen. The touch screen capability has revolutionized way end users interact with application. Touch screen enables the user to directly interact with what is displayed and also removes any intermediate hand-held device like the mouse. Touch screen capability is utilized in smart phones, tablet, information kiosks and other information appliances. **Analytics:** The field of analytics has grown many folds in recent years. Analytics is a process which helps in discovering the informational patterns with data. The field of analytics is a combination of statistics, computer programming and operations research. The field of analytics has shown growth in the field of data analytics, predictive analytics and social analytics. Data analytics is tool used to support decision-making process. It converts raw data into meaningful information. Predictive analytics is tool used to predict future events based on current and historical information. Social media analytics is tool used by companies to understand and accommodate customer needs. The every changing field of information technology has seen great advancement and changes in the last decade. And from the emerging trend, it can be concluded that its influence on business is ever growing, and it will help companies to serve customers better.

Keywords: Emerging Trends, Information Technology

1.0 INTRODUCTION

Worldwide influence of the internet is well-established and acknowledged. Penetration rate of the internet has been phenomenal; almost 1/3rd of Human population are accessing the internet. The way business is conducted in this digital age has changed due to so many people logged on to the internet. Advancement in communication and information technology has further strengthen the role of the internet in business. The internet is widely used in organization for marketing and promotion of products and services. The internet is used to deliver customer support, share information and provide training to employees. With the internet becoming a powerful tool for employees, the impact on business is undeniable.

1.1 Internet and Porter’s Five Force Model

Porter’s five force model is a framework for industry analysis, business strategy development and study competition. The five forces of the model are the threat from upcoming and future competition, threat from existing substitute, bargaining power of consumers, negotiating power of suppliers and threat of competition. Internet has great

1.2 Impact on all five force of the model:

Threat of new entrants: The internet has considerably lowered entry barrier in setting up new enterprise. The setting up of a new company does not require much capital investment, for example, online retail sites, etc. Ever increasing competition has lowered the margins.

Threat of new substitute: The Internet has reduced the product life cycle; shelf life of products and encouraged innovation is customer serving.

Bargaining power of customers: The internet has made the customer well informed about products and available substitute. Companies have to be careful in presenting differentiation and pricing.

Bargaining power of suppliers: Suppliers are well informed about happening in the industry thanks to the internet.

Threat of competition: The internet has made transparency and honest important factor in success of the company. Customers tend to know more about the company. The internet has lowered the cost of searching new available products.

1.3 Internet and the way business is conducted

The internet has changed the face of business. It has opened up new avenues of conducting business. Below are some impacts of the internet on business:

Communication: communication technology combined with the internet has given a new dimension to connectivity and dispersion of information. Employees are in constant touch through email, instant messaging, office intranet, etc.

Collaboration: The internet has facilitated collaboration among employees of organization. Geographical boundaries no longer hamper project work and sharing of information.

Business Transaction: The internet has encouraged the culture of online business or e-commerce. In recent years many players have opened shops through e-commerce. Internet banking, payment gateways, etc. are part of normal supply chain transaction.

Work Flexibility: The internet has enabled workers to log in from remote location and home. It has helped on the move employees by remaining in touch with happenings of work.

Web based application: The internet has facilitated the development of concept like cloud computing, which has enabled process and storing of data in large proportion. The internet has helped reduce infrastructure cost of the company. The internet thus has made a big impact in the way the business gets conducted in both positive as well as a negative way. The internet has made many business obsolete example post offices. Online security issues like hacking, identity theft, etc. are a constant threat to internet users.

2.0 THE ALIGNMENT OF TECHNOLOGY AND CORPORATE PLANNING

In the digital age, information technology plays an important role in the success of an organization. Technology provides edge in this globalized world. Companies are facing competition not only from local companies but from international companies as well. In such a scenario, it is important that company invest in technology which is aligned with overall strategy of the company. This calls for technology strategy formulation.

2.1 Technology Strategy Formulation

Technology strategy formulation talks about alignment between technology strategy and the overall strategy of the organization. Here the role of the Chief Information Officer comes into prominence. The CIO should have short term as well as long term vision of technology advancement. CIO should bridge implication of technology advancement and organization strategy. A clear communication of technology impact on organization needs to reach executive leadership. This alignment between CIO and CEO revolves around issues like:

- CIO roles and involvement in overall strategy formulation of organization.
- Financial resources available to make investment in technology.
- Earlier results of alignment between technology and organization strategy.
- External business conditions.

CIO faces challenge to provide technology value adds for organization in achieving its objective.

Planning: Corporate planning plays an important role in alignment of technology with organization strategy. In a perfect scenario CIO and CEO will have a same planning horizon. However, it is observed that the CEO and CIO do not share same vision, from planning to execution. This introduces the concept of planning lead time. In some organization, strategy execution does not match to technology planning horizon and execution. By the time technology strategy is executed, more advancement is observed in that system, thus competitive edge is lost. In the above scenario, companies become reactive rather than pro-active. Companies need to adjust with challenges posed by market leaders

and trend setters. A strong CIO-CEO relationship ensure organization develop understanding of technological challenges and its impact on overall organization.

Organizational Structure: Organization needs to ensure that their structure is agile and flexible as to accommodate changes in the technology. They should be efficient and effective enough to deal demands of the market change. Organization needs to develop and maintain technology systems, which are flexible and adaptive. There are three types of technology infrastructure available with companies' ERP, data warehousing and knowledge management. All three dimensions ERP, Data Warehousing and Knowledge Management provide cutting edge to the organization.

Organizational Systems: Organization invests in technology looking at its present needs; future requirements and its capability to provide a competitive edge. Systems can be classified into three categories depending upon technology timeline, new systems, matured systems and declining systems. New systems have latest technology and provide a competitive edge. As time progresses system and technology are adopted by more companies, thus losing competitive edge. Finally, systems and technology reach the obsolete stage where its usage has declined and is to be phased out. Executive leadership of organizations is responsible to manage new systems range as to enjoy competitive edge. However, this requires substantial investment and clear vision of future technology state. Therefore, organization has to walk a tight rope in investment in new technology and phasing out the obsolete.

3.0 INFORMATION SYSTEM FOR BUSINESS EFFECTIVENESS

In this digital age with fierce competition, it is essential that managers within organization are completely aware and receptive to evolving changes. One the quickest evolving change is within information systems. This change in information systems is contributed to advances in computing and information technology. Applying a concept that information system is strictly under the purview of IT department can lead to adverse situation for the company. Therefore, it is essential for organization to recognize information systems contribution in business effectiveness.

3.1 Systems and Innovation Opportunities

Development in information systems has brought opportunities but also threats. The onus is on the organization to identify opportunity and implement it. Organization needs to develop strategies, which can best utilize information systems to increase overall productivity. The most common practice with regards to information systems is automation. Though automation is helpful, innovation using information systems give the organization a competitive edge.

Systems and Customer Delight: Organizations are fully aware that proliferation of information systems has reduced product life cycle, reduced margin and brought in new products. In such scenario customer satisfaction alone will not suffice, organization needs to strive for customer delight. Information systems with data warehousing and analytics capability can help organization collect customer feedback and develop products, which exceed customer expectation. This customer delight will lead to a loyal customer base and brand ambassador.

Systems and Organizational Productivity: Organizations require different types of information systems to mitigate distinctive process and requirements. Efficient business transaction systems make organization productive. Business transaction systems ensure that routine process are captured and acted upon effectively, for example, sales transaction, cash transaction, payroll, etc. Further, information systems are required for executive decision. Top leadership requires precise internal as well as external information to devise a strategy for organization. Decision support systems are designed to execute this exact function. Business transaction systems and executive decision support systems contribute to overall organizational productivity.

System and Workers Productivity: Information systems have facilitated the increase in workers' productivity. With introduction of email, video conferencing and shared white board collaboration across organization and departments have increased. This increased collaboration ensures smooth execution and implementation of various projects across geographies and locations.

3.2 Information systems as a Value Add for Organization

Organization use information systems to achieve its various strategy as well as short-term and long-term goals. Development of information systems was to improve productivity and business effectiveness of organization. Success of information systems is highly dependent on the prevalent organization structure, management style and overall organization environment. With correct development, deployment and usage of information systems, organization can achieve lower costs, improved productivity, growth in top-line as well as the bottom-line and competitive advantage in the market. The readiness of workers into accepting the information systems is the key in

realizing the full potential of them. Development and deployment of information systems have revolutionized the way business is conducted. It has contributed to business effectiveness and increased in productivity.

4.0 CONCLUSION

After 1990s there was a major transformation in the commercial world. All the organizations across industry sectors have started using information technologies to maximize their productivity and profitability. Organizations started using technologies like mainframes, PCs, telecommunications and the internet along with the goods and services which they offered to the consumers. This process has become the backbone of evolution of information technology. There has been manifold increase in investments in information technology sector.

A driving force of productivity: The US economy has seen impressive growth in Gross Domestic Product in the past few years and it is in a state of expansion. There has been increased demand for labour and low inflation. The lack of increase in price has also flummoxed many economists. The traditional theories suggest that whenever there is growth in economy and decline in unemployment rate, there is an increased probability of price pressures. "Productivity" means the process of utilizing the productive inputs to generate output. If all the input resources like men, machine/technology and materials are effectively used, then the costs can be better managed and the organizations can offer goods and services at moderate prices to the end users.

By combining the state-of-art information technology with business strategies, organizations can achieve increased productivity. Business strategy addresses various like identifying the target markets, consumer preferences and managing the process by which goods and services are produced/delivered to the end user. Information technology makes it possible for the business leaders and decision makers to devise various business strategies based on economic theories. This is done with the flow of information to decision makers and employees throughout an organization. By implementing effective IT, the following operations can be easily analyzed by the managers.

Organizations have already started experiencing the enhancement of business efficiency through the use of information technology. Significant breakthroughs have also happened in information technology like increase in speed and memory of computers. This in-turn has opened the doors for high-powered, state-of-art software applications. The latest developments in the telecommunications technology is a value addition to the internet. The combination of all these technology has created a vast information network and this has become information pulse of an organization.

Business Intelligence (BI) refers to the tools and technique which is used to convert raw data into meaningful and useful information. Using these techniques, large amount of unstructured data is handled to identify and create new business opportunities. The main aim of business intelligence is to make the user easily interpret the data. Based on the insights provided by tools of business intelligence, organizations gain competitive market advantage and long-term stability. When these unstructured or raw data is transformed into value-added information, it increases the knowledge of business to individuals of all categories in an enterprise. These data are used by decision makers to implement various business strategies based on economic theory. Resources also can be easily managed to cater the needs of the ultimate consumer.

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