

Information Systems Driven Approach to Organizational Decision Making

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Abstract

In today's dynamic business environment, no organization can exist without analyzing its market environment, customers and competitors and taking appropriate business actions before their competitors. The ability to be pro-active and not reactive is one of the greatest techniques for creating value within an organization. This requires a continuous process of transforming information into intelligence and intelligence into actionable knowledge so that a company can plan for and manage the future. Information systems have for long been considered as competitive weapons; their ability to convert data into competitive intelligence makes them essential tools for today's enterprises. This research considers the role of information systems in transforming business information into knowledge to drive decision making within business enterprises. The research considers business intelligence from the perspectives of ICT tools adoption, growth in data capture in firms, organizations dependence on information in making decisions and the declining costs of ICT tools acquisition by firms as key characteristics that continue to drive the dependence of ICT as a critical driver of decision making in firms.

Keywords: Competitive intelligence; Business Intelligence, Information Systems, ICT, competitive advantage.

Introduction

The ability to be pro-active and not reactive is one of the greatest techniques for creating value within an organization. This requires a continuous process of transforming information into intelligence so that a company can plan for and manage the future. Growing international competition means that companies are under increased pressure to uncover what others in the industry are doing. The essence of Competitive intelligence is essential to enable organizations make better decisions on where best to direct their energies in driving their competitive agenda. Competitive Intelligence (CI) *“is the collection and analysis of information to anticipate competitive activity, see past market disruptions and dispassionately interpret events”* (www.fuld.com). Competitive intelligence is the coordinated and purposeful monitoring of your competitor(s), within a specific marketplace. CI aims at determining what your competitors will do before they do it.

Competitive intelligence requires a continuous process of transforming business information from competitors and other industry stakeholders into intelligence so that a company can manage the future. Many organizations have previously applied underhand tactics in gathering competitive information from their competitors. This is referred to as espionage. The internet has created a vast wealth of information that just has to be analyzed to gain competitive intelligence. Winning a battle in the business area implies, like in any other face-off, knowing your opponent, in this case, the competition, very well. The manager cannot make a viable strategy, founded solely on information about his company. A competitive strategy means that one is competitive because he differentiates himself from the others. And for this, one has to know what the others are doing.

Nowadays CEO's need a warning system which can timely deliver the relevant information from the business environment, so that they are able to make decisions with a secure level of certainty that allows the company to maintain its competitive advantage. Globalization of the market and the speed of ICT evolution require the usage of monitoring systems capable of identifying opportunity niches essential for the growth of the companies. One of the best tools for making this possible is Competitive Intelligence.

Competitive intelligence supports the strategic planning in every company. CI in business organizations has benefited greatly from military and government intelligence practices and knowledge. Many of the pioneers in the business intelligence community migrated from a variety of governmental organizations. Done properly, this helps a company avoid surprises by anticipating competitors' moves and decreasing response time. Put simply, competitive intelligence is a method of collecting and analyzing information that lets companies identify possible changes regarding competitors before these become obvious. Data can be gathered from public or private sources, from networking with a competitor's staff or customers or from research in the field. A key rule is that all activity must be legal. CI practitioners must also disclose their identities at all times and not collect information under false pretenses.

Growth in data capture within enterprises

According to a 2015 global IT trends report by the (WTO, 2015), over 3 billion computers were traded globally in year 2014. The WTO report notes that in the same year, the value of Information technology services exports reached 12 trillion dollars with E-commerce trade value for both Business to business E-commerce and Business to consumer E-commerce hitting 15 trillion dollars and one trillion dollars respectively.

These recent findings support earlier data by Oracle (2008) which highlighted the continued dependence on IT by organizations in the last few years has a phenomenal revolution for both the IT industry as well as for the digital firms. The value of trade in IT underscores the important position that IT continues to occupy in the global economy. As regard software systems, the rising global exports of software systems as discussed by (WTO, 2015) shows that organizations are continuously considering the growing importance of Information Systems and attaching the competitiveness of their firms to the benefits of adopting software systems to support and run key organization's functions.

Enterprise dependence on Information Systems

The growth in information systems adoption has seen a majority of organizations heavily rely on computer systems as a key competitive force (Rouhani, Asgari, & Mirhosseini, 2012). Perhaps it is important that we

differentiate these key concepts, Information systems (IS), information Technology (IS) and information communication technology (ICT) as they are critical to this research.

According to the business dictionary, an Information System (IS) is “a combination of hardware, software, infrastructure and trained personnel organized to facilitate planning, control, coordination and decision making in an organization.” Information Technology is defined by Oxford dictionary as “the use of electronic equipment’s especially computers for storing and analyzing information. While developing the curriculum for Information Systems and Information Technology, the Association of Computing Machinery (ACM) differentiates these two concepts by arguing that “Information systems (IS) focus on the information aspects of Information Technology: information Technology (IT) is the complement of that perspective; its emphasis is on the technology itself rather than what it conveys” (ACM, 2005, p. 14).

This definition is stressed by Boudreau et al (2007) who argue that an information technology (IT), transmits, processes, or stores information. An information system on the other hand is an integrated and cooperating set of software using information technologies to support individual, group, organizational, or societal goals. IT therefore mainly focuses on the equipment’s/infrastructure that supports the information systems and thus drives the operations of the computer system. Based on these arguments therefore, we argue that Information Systems are broader in scope than IT hence making IT a part of IS.

According to (techterms.com), ICT refers to technologies that provide access to information through telecommunications. The site argues that ICT is similar to IT except that ICT focuses primarily on communication technologies which include the internet, cell phones, wireless communication networks, and other computer communication networks. This definition borrows heavily from the definition by Wikipedia that ICT is an umbrella term that includes any communication device or application. Blurton (2002) defines ICT as a diverse set of technological tools and resources used to create, disseminate, store and communicate information. He adds that ICT leans more on the communication aspect on technologies. From these arguments, it is clear then that ICT leans more on the unified role of IT in communication. Thus, ICT is an extension of IT to include the communication aspect. The question therefore is whether these terms can be used interchangeably. Our argument in this research is to the negative. However, in the case of this research, an understanding of these three concepts is critical for the research to be of relevance. By this, it is our

observation that the adoption of IT and ICT can be an indicator to a firm's adoption of Information Systems. This is because the three concepts are inherently related and thus cannot be separated without leaving some grey areas in the research work and for the implementation aspect by the practitioners.

Information systems and organizational decision making

Information systems play a crucial role in the present knowledge based economy hence, organizations tend to rely heavily on IS solutions in order to develop and grow their businesses (Asgarkhani & Alison, 2010). The revolution in the use of ICT has had profound implications for economic and social development and has pervaded every aspect of human life (Okello & Were, 2014). The use of ICT is widespread and regarded as an essential tool for the efficient administration of any organization and in the delivery of services to clients. ICTs are being integrated into procedures, structures, and products throughout businesses, governments, and communities (Smith, 2001). It is thus clear as argued earlier that no organization can effectively compete in today's dynamic market environment without the application of ICT. Indeed, according to (Dinda et al., (2015), IS for long has been considered a competitive weapon. The application and use of IS has had profound results for businesses; even on the global arena, (WTO, 2015) notes that B2B ecommerce and C2C ecommerce alone had a contribution of over 16 trillion dollars in the year 2014 alone.

In today's world we use technology in almost every aspect of our lives, one of these being communication with each other. After the invention of the mobile phone and the Internet, our possibilities to communicate with other people have increased in many ways. Face-to-face communication has met rivalries such as the telephone, video conferencing and instant messaging. In addition to these extensions, complementary products such as wikis, forums, boards and co-working tools have emerged. All of these bring us up to a situation where, instead of walking to the landline phone or having to meet with the person, we are interacting with face-to-face; we can pick up our mobile phone or open up our laptop for an immediate communication. This makes it imperative to understand the role of communication technologies and the ways in which it modifies how we communicate with each other. More so, a lot of data is captured via ICT devices, through our day to day communication, this concept are defined as big data (Viewpointe, 2013). Of

importance to organizations and industry is how they access this data and mine it to support their competitive strategies (Smith, 2001).

IBM estimates that approximately 16 petabytes of data is captured every day (IBM, 2012). This data comes in various forms but usually in an unstructured manner (Intel, 2012) hence the need for data mining and analytics to identify useful patterns essential in driving the organization's agenda. Unless organizations are therefore prepared to develop systems with the capability to access and process useful information from within and outside its boundaries, the potential for growth in an ever changing and information driven society are severely challenged.

Due to the availability of different ways of communicating, Information and Communication Technologies (ICT) have received increased attention. Therefore it is essential to clarify that ICT is often used as an extension to the term IT, a special stress is given to the communication aspect. According to ACM (2008), ICT refers to all forms of technologies that are used to, create, store, display, transmit, or exchange information by electronic means. Later on when we discuss information and communication technologies in this research, we will refer to it simply as communication technologies.

Particularly, during the past decade, the IS field has increasingly applied theories from other disciplines to bring new insights. Therefore, communication technologies and the human activities associated with them have been studied from various perspectives and they have been examined through the lenses of different disciplines (ACM, 2005). Disciplines, such as management, psychology, sociology and Information Systems, have conducted research in this field.

ICT and competitive advantage

The interdependencies of different disciplines that drive an organization makes it vital to understand how these perspectives can be unified (Beveridge, N.D.). First of all, psychology field can address how technology affects an individual and how the individual's traits affect the use of technology. Psychology can also study how individual factors affect small group dynamics. Along with this field, small group research has widely contributed on the examining how groups communicate internally and externally. From a wider

perspective, when humans use technology to interact with other people, social factors come into play. When people interact with each other, it also contributes to the larger society as well as the smaller group level social factors. Management, on the other hand, is interested on how these dynamics affect an organization and how it can be intervened with. Technology, especially communication technologies, enables individuals to communicate with each other. Therefore Information Systems, being multidisciplinary in its nature, is interested with all of the three above and how these social, individual and technological factors build up the communications inside and between organizations (A&G, 2008). Hence, the approach of this thesis will have multidisciplinary dimensions and will apply theories from different fields.

There is a lot of evidence that the new societal structures enhance communication and increasingly impose consequences on several levels. ICT sector as a whole is claimed to affect the welfare of any national economy by having an impact on the GDP. The production of communication infrastructure enables the society to apply the provided technologies in new ways. It is also claimed by (A&G, 2008) that communication technologies influence how information is distributed inside an organization and how this is stored and shared among members of the organization. There is also undisputable evidence that communication technologies affect the individual's work and have a variety of effects on their personal lives (Oracle, 2008). The environment where individuals work in has changed in the recent decades and they have to cope with trying to encompass larger amounts of information at a faster phase than in the past.

One of the main reasons for the acquisition of communication technologies is that they enable the possibility of communicating over time and space (Butler analytics, 2014). Members of the organization simply cannot work today without continuous communication. But the issue of dispersed time and space is not only a positive one, companies also face the problems occurring from the fact that people no longer work in the same shared context of traditional office (Intel, 2012). It is easy to understand what possibilities video- and teleconferencing with people around the globe offer, but one should also consider the problems about issues such as time zone differences and possible individual isolation

Another issue that has increased the need of communication technologies is the growing amount of data and the need of shared decision making. Project oriented work has become a common way of working. Most knowledge workers are, at any single time, part of several different projects. Having to coordinate, store and

share information are essential for any project group. Communication technologies play a key role in making this happen, but are these technologies used in an efficient way? Companies that can provide an integrated way of communicating inside these project groups can provide workers with huge time savings if they offer the right type of knowledge, at the right time and in an easily understandable form.

In addition to providing profit for its shareholders, organizations increasingly have to consider society and its business environment. Organizations are not only about increasing the performance of the company; they are social entities that are composed of numerous individuals. Companies are responsible to their shareholders on their performance aspect, but they also have to consider other stakeholders when conducting business. The employees of a company are one of the most important stakeholders and they are the ones that organization provided ICT for job completion. Therefore, companies have the responsibility of both conducting profitable business and taking care of their employees. Increasing productivity can sometimes be achieved by increasing the workloads of the employees. Moreover, an increasing debate has been on the issues of remote work and mixing of employees' personal time and work.

In today's society the welfare of employees is one of the responsibilities that companies have to deal with. Also, the amount of information that workers transmit during their normal work days has grown and so has research on how people actually deal with the increased amount of information and the communication associated with it. According to Finland National Knowledge Society Program, today's society requires various skills to deal with information. Skills such as, capability to absorb knowledge readily, complicated problems solving, independent searching of information, information creation and innovation are seen as essential in the future. The report also notes that in the increasingly networked society the capabilities to perform work in various contexts and the sharing of information become important. Imposing such requirements on individuals' skill levels certainly seem prone to affect the everyday work they do.

Increasingly, individuals are associated with knowledge work. Therefore the amount of effort that is used in deciphering and decoding information has grown. One of the major reasons behind this increasing importance of information overload is IT and communication technologies. Deployment of new communication technologies such as DSS, Intranet, Wikis, email, IM and extensions of telephones such as telephone conferences and video conferences have certainly had a huge impact on the amount of

information transferred through various channels. The discussion has been on the amount of positive and negative effects these technologies have. These technologies have provided the opportunity to adjust when and how an individual sends and receives certain information. It has also provided a better way of pushing the right information to the right person on a timely fashion. The downside of this is that people tend to receive information in a more continuous fashion through several channels, and not all information is relevant for the receiver.

Conclusion

ICT and Information Systems continue to be critical players in every firm's decision making process. The characteristics of ICT infrastructure adopted in developing economies as well as small and medium enterprises are different from that of developed countries and large multinational firms. Developing economies face a number of supporting infrastructure challenges such as electricity, unreliable power, high power cost, unreliable internet connection and the cost of computing itself. Therefore, mobile computing is widely preferred and adopted by firms in these economies to counter these challenges. The acceptable IS structure found in SMEs in these economies should therefore be able to put this into consideration during IS adoption. ICT offers a new era of enabling firms to make more better and reliable decisions. The capability for data analysis driven by data mining and analytics tools offers greater benefits to firms as they aim to compete effectively in the market. This reliance on ICT can only be expected to grow with time. It offers a seamless integration of core business decision infrastructure which will enable firms to make more customer driven decisions. Firms that realize that capability today stand to strengthen their market presence with more better products targeted to the right market and to the right customers.

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