DOI 10.17605/OSF.IO/XV6TP
ORCID 0009-0009-2559-6676

Contents

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Introduction to the Role of Information Systems and Technology

1.1 Description of Management Information Systems

Management information systems are computer systems within an organisation that incorporate both hardware and software operations. It involves using business processes, people, and technology to collect, record, process, and store essential data that is significant to decision-making processes (Hartanto and Asmuni, 2017, 11). Management information systems are also used to coordinate, analyse, control, and visualise crucial organisational information. The ultimate goal of using MIS within the corporate environment is to increase value creation and profit earnings for businesses.

Information systems play a significant role in helping global organisations become competitive and innovative because of their capacity to enable multinational corporations to develop superior business coordination skills necessary for the management of a global economy (Laudon and Laudon, 2013, 19). Organisations that have adopted effective information systems have a superior capacity to collect, analyse, visualise, and store appropriate market data that they can use to enhance efficient functioning and competitive position.

1.2 How Businesses Use Information Systems in A Global Context

The information systems additionally help organisational managers to make better decisions using real-time data on a global scale. With the improved capacity to gain access to better quality information, organisations operating on a global scale can effectively respond to the continuously changing global market trends and improve their innovative capabilities. Information systems additionally promote the success of shared human resources that are significant assets for a global market. Since numerous global market products acquire high information intensity that are the outcomes of varied and specialised knowledge of the human resource (Chaffey and Wood, 2010, 29), the bulk of the work performed by shared human resources can be transmitted electronically among employees in the global context using information systems drivers such as teleconferencing, intranets, e-mails, and electronic meeting systems. This creates more opportunities for sharing knowledge and collaboration easier.

In global products, information systems help organisations identify market gaps and opportunities for companies to launch global products with little modifications to increase their economies of scale. Information systems also enable organisations to coordinate market plans across different countries and regions. Quality is a significant attribute of products and services sold in the global markets. As such, many global organisations have resorted to implementing TQM practices to enable them to meet the demands of global customers (Grover et al., 2018, 421). Information systems help organisations establish quality attributes required by global organisations by benchmarking the aspects of an organisation's operations with top-performing entities in the global market.

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1.3 Role of Information Systems in Developing Business Strategy

A business strategy means that an organisation sets out to achieve its goals and objectives by continuously growing its competitive advantage. The use of well-designed and coordinated information systems help organisations to collect and analyse independent information on business processes such as production variables and to effectively organise work activities that improve their productivity and their ability to respond to the needs of customers through effective decision-making processes (Fehrenbacher and Djamasbi, 2017, 5). As such, information systems play a significant role in helping organisations grow their competitive positions by analysing essential data on how they can identify new market gaps, produce, and sell products and services that result in an improved level of customer satisfaction. Additionally, organisations can use information systems to monitor and assess their performance statistics and gauge if they follow the right path towards achieving their goals and objectives.

1.4 How Information Systems Contribute To Achieving Competitive Advantage

Information systems have become an essential tool that organisations use to respond to changes in the business environment and global economies. Organisations use the communications and analytic tools provided by information systems to manage business operations and effectively conduct business activities on a local and global scale. Information systems for the foundations of knowledge bases for products and services. To improve their competitive position in the market, organisations need to learn how to effectively manage information systems and knowledge assets provided by the information systems to enhance their ability to perform better than their competitors (Laudon and Laudon, 2013, 5). Among the competitive advantages provided by information systems to organisations is the possibility that organisations have for adopting more flexible employment arrangements and effective coordination between departments and other units of a parent organisation in other regions. Through such flexible arrangements, organisations develop the capacity to effectively adapt to new market changes and improve their capacity to become competitive.

The digital operation platforms provided by the drivers for information systems additionally improve the efficiency of business operations and the quality of the organisation's relationship with employees, customers, and suppliers. The outcome of such relationships is improved organisational productivity and competitive position in the market. Additionally, information systems help organisations to lower production and operational costs, which, in turn, enable them to lower the cost of products sold to customers. With reduced costs of products, organisations improve their capacity to attract and retain more customers. Information systems also improve an organisation's differentiation capacity (Vyshnavi, Sree, and Jayapandian, 2019, 658). In cases where an organisation is dealing with global products and services, it can effectively use information systems to identify new market gaps and make minor modifications and improvements to such products and services to differentiate them from its competitors.

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The Unique Features of E-Commerce

Ubiquity: This means that e-commerce is available everywhere. With the growth of the internet and technological tools such as cell phones, individuals can readily access e-commerce at affordable prices anywhere (Shemi and Procter, 2018, 23).

Global reach: E-commerce is an online marketplace that encompasses all types and aspects of a business that an individual can need. The global reach feature of e-commerce creates opportunities for small and large scale businesses to conduct business operations outside their physical locations as they connect with customers across different regions on the global market (Baller, Dutta, and Lanvin, 2016, 19).

Universal standards: The internet provides universally accepted standards that regulate the operations of the e-commerce platform. These standards guide interactions between buyers and sellers and how information is presented (Laudon and Laudon, 2013, 26). The universal standards guide the e-commerce platform's operations and form an equalising playing field for all businesses.

Richness: The e-commerce platform provides users with a wide range of information in printed texts, videos, interactive text options, and audio messages that make up its richness quality. E-commerce organisations use various methods to amplify their advertising capacity and attract the customer's attention.

Interactivity: The e-commerce platform provides customers with online agents to interact and address issues that may arise during the business transaction process. Customers give feedback and reviews on products that they have used, allowing new buyers to make sound decisions on whether to buy a product or not (Sargolzaei and Nikbakht, 2017, 145). A more advanced interactive feature of e-commerce is that customers can rate their experience with a product purchased and seller.

Information denseness: With e-commerce, organisations provide dense information about their products and prices. Organisations can readily access information about their competitors, effective delivery services, and manufacturer's data (Shemi and Procter, 2018, 17). This allows businesses and consumers to save time and resources for information processing, communication, and storage. It results in improved customer experiences, reduced costs, and improved service times.

Personalisation: E-commerce gives customers opportunities to personalise the products and services that they need (Song et al., 2021, 32). With customisation capacity, customers can create the products that they wish to buy and get them delivered to their doorstep in time.

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Impact on a Business of Information Technology

2.1 Role of Information Systems and Technologies in Transforming Business

Information is an essential foundational element of every organisation. Information systems and technologies play significant roles in transforming business contexts and operations. With constant changes in technology that significantly impact the business environment, new and innovative business models continue to transform the practices adopted by various business organisations to improve their competitive positions in the market. Business organisations are consistently using information systems and technology to identify and respond to the rapidly changing business dynamics, such as customer needs. Business organisations also use information systems and technology to reduce inventories to achieve the lowest possible operational levels and achieve the highest potential operational efficiencies (O'Brian, 2011, 13). To achieve these business transformations, organisations use technology and information systems to automate processes and make sound decisions concerning the identified market trends. With an effective information system and technology, business organisations collect and store comprehensive data that they analyse to identify actions that affect business operations and prepare cost estimates of appropriate mitigation plans (Piccoli, 2019, 45). The information systems also enable organisations to forecast future trends that may impact their operations and respond to them quickly.

2.2 Role of Information Systems in Global E-Business

Modern business organisations operate in a world where rapid technological developments have significant influences on their operational context. E-businesses are exposed continuously to dense information on the internet since various e-commerce activities provide essential data that information systems collect, analyse, and create room for their implementation. In turn, the information systems provide a report of the collected and analysed e-commerce data that organisations use to influence their e-commerce processes (Post and Anderson, 2005, 11). Information systems fully integrate information flows within the e-commerce platforms and visualise possible trends and forecasts within these platforms. E-commerce organisations then use such information to improve their competitive positions in the global e-commerce platform.

2.3 The impact of internet technology, e-commerce, and social media on traditional business models

Internet technology, e-commerce, and social media provide individuals and business organisations with enhanced global connectivity and platforms that allow for seamless flow of information on a global scale (Slack et al., 2012, 7). Internet technology sustains e-commerce and social media development, online platforms that encourage organisations, customers, and suppliers to conduct business transactions without maintaining physical touch. Online transactions have changed the traditional business models that necessitated physical transactions between business partners. Accordingly, the social media and e-commerce platforms provide a wide range of information that customers and businesses can access to improve their strategic decision-making process in the shortest time possible instead of traditional business models (Laudon and Laudon, 2015, 15). To

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keep up with these changes and improve their competitive positions, the traditional business models need to find alternative ways to make information readily available for stakeholders and make the business process more efficient.

Information Systems and Technology and Business Performance

1.1 Assessing the Need For and Key Components of an Effective Information Technology Infrastructure

The components of information technology infrastructure consist of the two interdependent elements of software and hardware. Hardware elements consist of computer servers, routers, hubs, and data centres. Software elements consist of network, content management systems, web servers, O.S., customer relationship interface, and enterprise resource planning (Rainer, Prince, and Watson, 2017, 24). The I.T. infrastructure enables organisations to increase employee productivity, collect real-time data that help with effective decision-making, provide practical customer experience through the use of uninterrupted online services, and develop and implement effective solutions to various market problems. For instance, I.T. infrastructure facilities such as operational plants provide adequate working space for organisations to put all the I.T. infrastructure components together and effectively perform required operations. The various parts of I.T. infrastructure are interdependent (Legner et al., 2017, 306). Therefore, to have functional information systems, organisations need to invest in these components and human capital to operate them.

1.2 Reasons for Building Effective Information Systems

A business organisation's successful management requires that organisational leaders make decisions based on data and statistics provided by the quality and useful information systems. With sufficient information systems, an organisation is guaranteed of gaining access to reliable data that enhances their chances of effective decision-making, better planning, and quality outcomes of a decision-making process (Grover et al., 2018, 391). For instance, if an organisation needs to decide on its manufacturing process, sufficient information systems will provide it with better information that it will use to improve its manufacturing cost and increase the quality of its products.

1.3 Impact of Key Emerging Information Technologies on Business Performance

The incorporation of information technologies in business has helped with the automation of processes and operations. In turn, this has helped with reducing operational costs, saving time, and increasing workflow efficiency (Hartanto and Asmuni, 2017, 24). Businesses today enjoy improved productivity since the costs and time saved can perform other tasks resulting in increased business processes speed. The incorporation of information technology has enabled organisations to store quality data and performance statistics, which reduces errors and can be easily retrieved when needed. Emerging information technologies such as instant messaging help employees within an organisation to communicate efficiently with one another and get instant responses

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(Bashee et al., 2019, 279). This creates room for instantaneous interaction and problem solving within the workplace.

1.4 How critical information systems can improve business performance

Key information systems within an organisation help with the simplification of the data processing and presentation process. Information systems enable organisations to plan operations based on information provided by organised data (Saeidi et al., 2019, 70). With crucial information systems, organisations are assured of access to organised and reliable data that influence a decision-making process. Critical information systems help organisations to avoid various forms of crisis if they occur. In the past, business organisations could not effectively analyse information on market share, which resulted in a lot of crisis for most businesses (Shemi and Procter, 2018, 7). The effective use of critical information systems enables organisations to analyse stock information, check on their performance statistics, and forecast future disasters. The availability of data helps organisations with increased efficiency of the decision-making process. This enables organisations to get a better perspective of the future of their business performance.

1.5 The Relationship between Information Systems and Decision Making

Organisational managers use information systems to generate various data that organisations use to make substantial decisions and relevant forecasts of performance trends. The information systems' important data are useful for making accurate decisions on where and when resources can be used to achieve desired organisational objectives (Ismail, Khater, and Zaki, 2017, 10). Accordingly, the decision-making process significantly relies on the quality of the information provided by an organisation's information systems. The quality of an organisational decision and its outcome depends on the quality of information systems used.

Building and Managing Effective Information Systems

2.1 How to Manage Information System Projects

The success of an information system project depends on the project leader's ability to manage the entire project life cycle and avoid errors effectively. Some of the effective ways for managing these projects include defining the expected outcomes of the project, forming a functional project team, defining the duties that the system intends to perform, identifying the right solution to the problem, selecting the right vendors, estimating implementation, and operational costs, creation of an implementation plan, and understanding and managing project risks. These processes define a practical management approach for an information systems project that will see it to its completion stage and ensure that it achieves the project goals (Song et al., 2021, 19). An example of an information system project is preparing a toolkit for healthcare managers to manage the coordination of information between different departments. To achieve this I.S. project's goals, the project manager needs to follow the above management guidelines.

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2.2 Challenges to Developing Global Information Systems

The global information systems' operations depend on virtual communities with different languages, social, demographic, and cultural backgrounds. This difference may make it hard for virtual teams to work together, resulting in a negative outcome for team productivity. Information system failures are another significant challenge faced in developing global information systems (Chen et al., 2017, 18). Such failures are common in developing countries due to adverse political influence, corruption, and stiff procurement procedures. The computer information system projects take too long to complete. Additionally, concerns over the quality of the final product and the availability of limited support for the project developers cause the operational costs to overrun the established budget and limit the project's capacity to be fully developed and implemented (Fehrenbacher, and Djamasbi, 2017, 8). Consequently, the level of organisational investment in information systems often increases with time. This results in an increase in an organisation's informational capacity and an overload on the global information systems.

2.3 How a Business Can Develop Structures for Global Information Support

A data warehouse is among the many ways a business organisation can cultivate support structures for global information systems. Data warehouses combine various data sets across an entire organisation and place them into one central database to make the information system's operations easier (Melnikova, Eltsova, and Krasnukhina, 2019, 17). With data warehouses, organisations can readily access data and share them with other enterprises to gain a broader view instead of using isolated information segments. Due to the complexity of global information systems, organisations can use data warehouses to retrieve data from various operational databases, analyse them, and maintain their integrity (Baller, Dutta, and Lanvin, 2016, 26). Companies can also use decision support systems (DSS) to help with the decision-making process through interactive computer models and detailed real-world processes. DSS provides specific data that relate to organisational issues at hand. DSS can be used as a forecasting tool for future business trends based on corporate leaders' recent decisions.

Social, Ethical, and Security Issues

3.1 The Implications of Ethical and Social Issues For Managing Information Systems

The ethical issues associated with information systems are health risks, information privacy, and employment. The prolonged use of information systems makes individuals vulnerable to health conditions such as Techno-Stress and Computer Vision Syndrome (CVS), Carpal Tunnel Syndrome (CTS), and Repetitive Stress Injury (RSI). These health risks are expensive to treat and manage and hurt an individual's productivity. The information system community is continuously involved in a process for re-engineering the work process. A vast amount of work previously done by human beings is now being conducted through information technology (Pearlson, Saunders, and Galletta, 2019, 65). For instance, clerical jobs and mid-level management jobs are continuously lost to information systems operations, leaving many unemployed. Accordingly, information systems are redesigning business models, which further pushes more people out of

employment opportunities. Such trends risk society existing in a state where only high tech professionals rule permanently unemployed people. Besides, information systems raise severe concerns over information privacy (Laudon and Laudon, 2013, 81). Since the I.S. accommodates a vast amount of data, organisations need to decide on the type of information they manipulate security and the personnel with exclusive access to protected information. Accordingly, personal information is always retained in the information systems when individuals use their credit cards, mobile phones and make electronic transactions everywhere (Sargolzaei and Nikbakht, 2017,143). Such information can be used to learn about individual making privacy for personal information a significant challenge for the management of information systems.

3.2 Security Risks Faced By Information Systems

Information systems' significant risks are classified into general information technology risks, criminal information technology risks, and natural disasters. Natural disasters such as fire outbreaks, floods, and cyclones present a greater risk to data infrastructure, information systems, and data as they cause damage to buildings and hardware that, in turn, corrupt data records (Rainer et al., 2020, 78). General IT risks to information systems include failure of software and hardware due to loss of power, corrupted systems, malware attacks, viruses, human error, and unsolicited e-mails that fool people into providing protected data. Criminal threats that affect information systems' security include dishonest actions by a staff member that results in revealing confidential information, hacking into the information systems, security breaches, denial of service attack, fraud, and theft of passwords and security codes to enable malicious activities by hackers.

3.3 Tools and Technologies Used For Protection of Information Systems Security

Tools used for protecting the security of information systems are authentication, access control, and encryption. The authentication process is accomplished by providing users with identification details and passwords that they must use while accessing the information systems. The authentication confirms something that a user knows. Access control ensures that users only gain access to appropriate data. Access control determines the kind of data that each user is authorised to access and modify. Encryption involves encoding data during transmission or storage to prevent unauthorised access (Ali et al., 2020, 68). The encryption process is conducted using a computer program, and the receiver has to decode the information to read it upon receipt. Symmetric key encryption and public-key encryption are the most commonly used encryption methods for data protection. When passwords are used for data protection, they must be involved, changed regularly, and not shared among unauthorised users.

An essential tool for enhancing information security is developing a comprehensive backup plan for an entire organisation's data. An effective backup plan contains offsite data storage units and provides a complete understanding of the information stored. Firewalls are another effective method that organisations can use to protect their information systems. A software firewall runs within the operating systems, intercepts, and prevents any malicious data detected within the computer system. A firewall also restricts data flow out of an organisation to prevent unauthorised

sharing of critical information to outside sources (Vyshnavi, Sree, and Jayapandian, 2019, 657). Organisations can also use Intrusion Detection Systems, a device installed in the system to detect any form of intrusions. It only functions to identify and warn of an attack on the information systems.

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