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Review Article

Mobile Apps Based Management Information System Using Cloud Computing in E-marketing and E-learning

Amr Salah Hamed Ramadan Ali*, Ezzat Garras Khalil

Department of Management Information Systems, Higher Institute for Advanced Studies, El-Haram St, Giza, Egypt

Email address:
Amr.Salah.Egy@gmail.com (A. S. H. R. Ali)

*Corresponding author

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Abstract: Mobile apps became very important to our daily live, especially in global marketing and education. Developer skills and modern technology environment play important roles to improve the function and quality of developed communication using mobile apps. In the modern environment, there are two basic approaches the hardware tools and the software computing tools. One of advanced software computing environments named "integrated cloud technology". The cloud computing technology environment includes Parse server. Parse server is black box which represents catch phrase. This paper reviews and discusses the major important issues obtained by management information systems (MIS) and their applications such as many functions have not made without communication like services and online marketing and education using smartphone. These issues really based on developer skills and modern technology environment. Furthermore, future trends under development in this area are presented and discussed to display proposed solutions for the important issues that need to be addressed scientifically for mobile apps. The objectives of this paper are presented in details and summarized in the conclusion for E-marketing and E-learning.

Keywords: Mobile Apps, MIS, Cloud Computing, E-marketing and E-learning

1. Introduction

The use of mobile apps through smartphone became essential issue, especially with the increase in population and traffic density in all around the world. A smartphone is a multifunctional device, not only for calling, easy to helps for learn, earn, fun, and many others. One of these advances uses would like to know the technical specifications of the products, for the purpose of online purchase using mobile app at both local and international trading levels. The work in this area mainly based on the availability of accurate raw data and information systems, through appropriate technological environment for E-marketing and E-learning. Therefore, the structure of MIS and its applications are discussed in details for their importance in these areas. So, we realized the importance of planning as part of requirements for analysis, design and implementation for mobile app developers. Because any success of mobile app will achieves benefit for each of mobile user, company and globalization economic. Thus, this paper has been prepared to give the researchers background to understand and to increase their professional skills. The new in mobile apps of online purchases and engineering issues have also been considered. Moreover, future directions under development will be presented and discussed scientifically in order to introduce proposed solutions for these issues that need to be addressed in the area of interest.

To achieve this goal, we will firstly talk about the following topics: management, information systems, management information systems, databases through the cloud technology, E-marketing, E-learning to increase the background of authors and readers. Introduction to proposed mobile app for common applications is also discussed.

2. Information Systems

In modern sciences, any study depends on the availability of accurate data, where data is essentially raw materials. In the beginning 1930s, the general theory of system (GTS) science puts principles, models and laws to be applicable for determine the nature of the system [1-2]. Where, any system consists of a set of procedures based on inputs, processing and outputs. In the early 1980s, several new roles for information systems (IS) appeared [3]. So, information systems are became cornerstone for current knowledge century. Therefore, the real progress in the world is mainly based on the application of information systems. Many organizations are working with many large numbers of data using information systems. Data are the basic values of facts organized in a database. Information consists of data that has been organized to help answers questions and to solve problems. Information system is defined as the software that helps to organize data and solve problems. Actually, information system depends on software and hardware. Hardware is used such as processor, PC, mobile, monitor, keyboard and printers. Software such as programs used to organize, process and analysis data. While database includes data organized into tables, figures and files. So, the purpose of an information system is to turn raw data into useful information that can be used for decision making in an organization [4]. Information systems are classified includes the following scientific domains:

a) Data banks
b) Electronic trade
c) Database systems
d) Smart information systems
e) Logistic information systems
f) Building information systems
g) Distributed information systems
h) Multimedia information systems
i) World Wide Web systems (Internet)
j) Accounting information systems (AIS)
k) Geographical information systems (GIS)
l) Administrative information systems (AIS)
m) Communications information systems (CIS)
n) Methods of developing information systems
o) Economics of information systems data searching
p) Applications of information systems in the various fields
q) Quality assurance of the programs and information system
r) Administrating information cares integrated information systems;
s) Analyzing and designing information for developing information systems

One may needs answer the following question: Why are there different types of information systems? As we know, in the early days of computing, each time an information system was needed it was 'tailor made' - built as a one-off solution for a particular problem. However, it soon became apparent that many of the problems information systems set out to solve shared certain characteristics. Consequently, people try to build a single system that would solve a whole range of similar problems. However, they soon realized that in order to do this, it was first necessary to be able to define how and where the information system would be used and why it was needed. It was then that the search for a way to classify information systems accurately began [5]. On the other side, IS becomes the backbone of modern education technology. IS helps to store valuable student information and helps administration manage the educational institutions. If an IS tool benefits teaching, it in turn benefits institutions administration and the learning students. IS is a collaborative effort which affects all aspects of education [6]. In the next section, we will look to the essential type from information systems "management information systems" for their importance everyday life.

Management Information Systems

Management is one of the oldest important human activities. Organization management has been defined in a variety of their specializations. Management is usually defined as planning, organizing, directing, and controlling the business operation. This definition, which evolved from the work of Mr. Henri Fayol (French engineer, was born: July 29, 1841 and died: November 19, 1925) in the early 1900s, defines what a manager does [1]. Thus, I can say, good management is the framework of processes, procedures or act of getting people together to achieve organization goals and objectives using available resources efficiently and effectively.

Management information system (MIS) is the study of people, technology and organizations. MIS is a broadly used and applied term for a three-resource system (people, information and technology) required for effective organization management [3-5]. On the other hand, MIS is a system or process that provides the necessary information to manage an organization effectively [2, 7]. MIS should have a clearly defined framework of guidelines, policies or practices, standards and procedures for the organization. This should be followed throughout any of the organization in their development, maintenance and use. Types of management information systems can generally classify functionally into four basic categories as follows in figure1. If you needs enjoy new technology likes android phones and tablets you must know MIS.

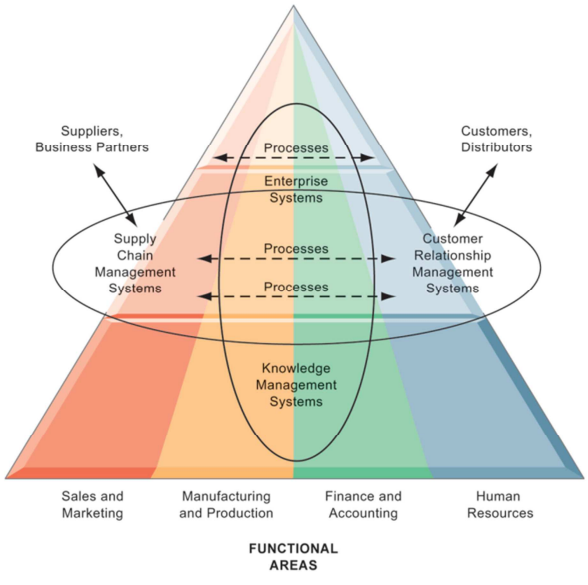

Figure 1. *Functional classification of management information systems [8].*

So, MIS can be used for integrate the management of all internet information and external information accrues an entire organization. To study in business field, must know the relative relation between the following fields:

a) Management Information Systems (MIS)
b) Computer Information Systems (CIS)
c) Information Technology (IT)
d) Computer Sciences (CS)

It is provides useful information to the different levels of management for discharging their function more effectively and efficiently. Figure2 shows the mean structure of management information system as presented in the reference [9]. Quality management principles (QMPs) are other important parameters. The standard seven QMPs are [10]: customer focus, leadership, engagement people, process approach, improvement, evidence-based decision and relationship management.

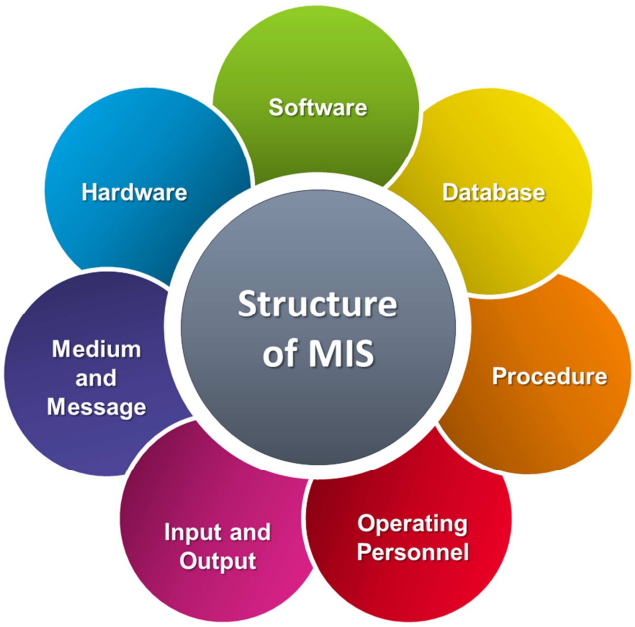

Figure 2. *Structure of management information system [9].*

In order to understand design of suitable management information system, this means that the structure of management information can be expressed in terms of different levels of management activity. There are three important levels of management namely strategic management, management control (tactical management) and operational management [11].

Therefore, the developer must study the system analysis, database design, networking and the management of projects integrating in different MIS applications. There are many civilian applications besides defense and aerospace applications for MIS in controlling marketing and education activities as shown in the figure3. While there are more important issues such as security, safety, transportation technologies are relevant to mobile apps and MIS need more discussion in another context. Finally, the developer must protect the integrity, privacy, and security of the data and information held by the organizations in different applications.

Figure 3. *Applications of management information system.*

3. Databases

Database is an essential part of almost all enterprises today. Over the course of the last four decades of the twentieth century, use of databases grew in all enterprises [12]. The internet revolution of the late 1990s sharply increased direct user access to databases. Organizations converted many of their phone interfaces to databases into Web interfaces, and made a variety of services and information available online. Databases are widely used. Here are some representative applications [12]:

a) *Banking Databases*: For customer information, accounts, and banking transactions.
b) *Credit card Transactions Databases*: For purchases on credit cards and generation of monthly statements.
c) *Airlines Databases*: For reservations and schedule information. Airlines were among the first to use databases in a geographically distributed manner-terminals situated around the world accessed the central database system through phone lines and other data networks.
d) *Universities and Educational Institutes Databases*: For student information, course registrations, and grades.
e) *Manufacturing Databases*: For management of supply chain and for tracking production of items in factories, quality control, inventories of items in warehouses/stores, and orders for items.
f) *Telecommunication Databases*: For keeping records of calls made, generating monthly bills, maintaining balances on prepaid calling cards, and storing information about the communication networks.
g) *Finance Databases*: For storing information about holdings, sales, and purchases of financial instruments such as stocks and bonds.
h) *Sales Database*: For customer, product, and purchase information.

i) *Human Resources Databases*: For information about employees, salaries, payroll taxes and benefits, and for generation of paychecks.

3.1. Commercial Databases

Specialized research firms develop ongoing commercial databases, which contain information on population traits, the business environment, economic forecasts, industry and company's performance, and other items. The research firms sell access to their databases to clients. Generally, databases are available in printed form, on computer disks, CD-ROMs or tapes and as online download from the internet. Among the best-known database services are ABI / Inform, ProQuest, InfoTrac Web, Dow Jones Interactive and Lexis-Nexis [13].

Database marketing – it's may be defined as a computerized technique that compiles, sorts, and stores relevant information about customers and potential customers; uses that information to highlight opportunities and prioritize market segments; and enables the firm to profitably tailor marketing efforts for specific customers or customer groups. Data-base marketing works such as [13]:

a) It creates a bank of information about individual customers.
b) It uses that information to analyze buying and inquiry patterns, thereby creating the ability to target goods and services more accurately.
c) It can be used to promote the benefits of brand loyalty to customers at risk from competition.
d) It can fuel sales growth by identifying customers most apt to buy new goods and services.
e) It can increase sales effectiveness.
f) It can support low-cost alternatives to traditional sales methods, which can be of strategic importance in markets where margins are being eroded.

Worldwide, millions of organizations now use some form of MIS. Progressive firms (and divisions within the same firm) are transmitting and sharing marketing information with each other-quickly and inexpensively. One-half of Fortune 1000 companies and one-half of large retailers are actively engaged in database marketing.

Also, database learning – it's may be defined as a computerized technique that available to use for develop curriculum plans and student skills specially for specific students or student groups. In other words, database learning adds learning ability to conventional memory less approximate database systems. Basically, database learning is different and superior for several reasons as follows [14-15]:

a) Database learning incurs little storage overhead as it only retains past large numbers of queries and their answers.
b) Database learning can achieve benefit future queries even when their tuples are not contained in previous queries. This is because the trained probabilistic model spans the entire data.

3.2. Database Management System

A database management system (DBMS) is a collection of software programs that enables to store, modify, and extract information from a database [16]. DBMS is a piece of software that manages databases and lets you create, edit and delete databases. There are many different types of database management systems, ranging from small systems that run on PC to huge systems that run on mainframes. Examples of database management systems such as MySQL, Microsoft SQL Server, Oracle, Postgre SQL, SQLite, and PARSE DASHBOARD using cloud technology.

Where, PARSE "Parse" is a cloud-based data management system that allows you to quickly develop web apps and mobile apps [17]. Parse makes developing apps really easy by taking the back-end out of your hands. Parse provides a great QuickStart guide to help you get started. Parse will generate a zip file that contains the Parse SDK and index.html. Therefore, it must understand what the meaning of cloud technology.

4. Cloud Technology

Cloud computing as a new technology is internet-based computing, whereby shared resources, software and information are provided to computers and other devices on-demand, like the electricity grid. The cloud computing is a culmination of numerous attempts at large scale computing with seamless access to virtually limitless resources [18]. It is providing excellent facilities to business entrepreneurs by flexible infrastructure. Cloud computing consists of three types are: IaaS, PaaS and SaaS [19]. IaaS means Infrastructure as a Service, contains the basic building blocks for cloud IT and typically provide access to networking features, computers, it can be virtual or on dedicated hardware, and data storage space. It provides you with the highest level of flexibility and management control. PaaS means Platforms as a Service. It removes the need for organizations to manage the underlying infrastructure (usually hardware and operating systems) and allow you to focus on the deployment and management of your applications. SaaS means Software as a Service provides you with a completed product that is run and managed by the service provider. In several cases, people referring to Software as a Service are referring to end-user applications. Cloud computing can be classified into three models are public cloud, private cloud and hybrid cloud. Some leading proved cloud computing in e-marketing such as Amazon Web service, Microsoft Azure, Oracle cloud and IBM cloud [19].

In a short time, cloud computing technology plays a black box. Cloud computing technology has become an amazing in use, perhaps even the most vital part of an enterprise's IT strategy [18]. Especially with big data which is growing rapidly in the last two years to support the government development and sustainability for many countries around the world [20]. Cloud technology has helped free-up a huge chunk of the IT from the constrictions of legacy software and hardware licensing data center models, and has opened, revolutionized and to an extent democratized the way IT delivers services and how the users access information, applications and business services [18]. Figure4 indicates

multi applications of cloud computing technology in IT.

Services Using Cloud Technology

There are many large multinational companies around the world use the cloud services in their applications for clients via the internet. One of these companies offered array of cloud services to their clients as showing in figure5.

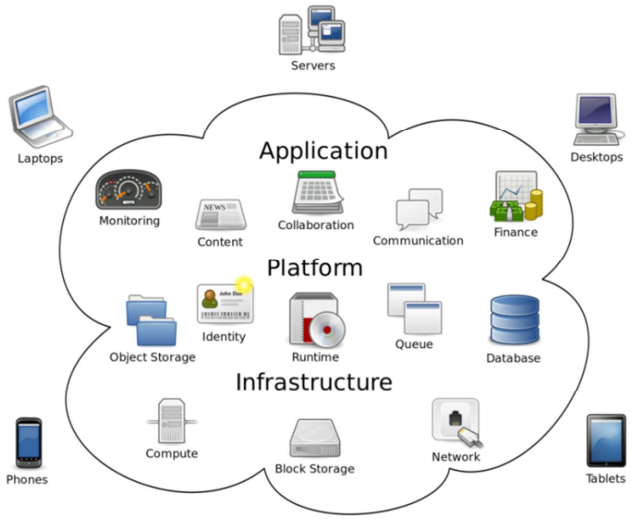

Figure 4. *Many applications of cloud computing in IT [18].*

Figure 5. *Basic applications of cloud computing [19].*

5. Mobile Apps in Electronic Marketing

There are many new applications using smart mobile apps in electronic marketing (E-marketing). Generally, definition of the E-marketing means the marketing of any products and services using electronic media such as the Internet (which includes search marketing, email marketing and social media marketing) but also now including the rapidly developing mobile marketing environment. E-marketing, sometime called digital- or global-marketing. E-marketing using mobile apps have many advantages for both institutions and individuals or the buyer and seller (customer). Figure 6 shows the increasing growth rate in use mobile apps (blue color). Mobile app becomes confirmed solutions for delivering tangible gains in productivity, efficiency and customer satisfaction. Yet, any development for mobile app software or and deployment efforts come with a measure of risk. These risks can be minimized with increase the customer background.

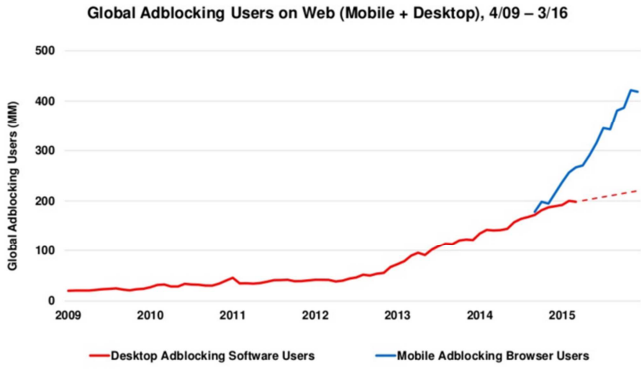

Figure 6. *Growth rate in mobile apps globally [21].*

In E-marketing using mobile app, there are global multinational companies (GMNC) was used mobile apps such as Amazon app and Souq. com app. The mobile apps becomes more reliable and high applicable as a result of its own for the benefit of all. Figure 7 shows expected increases in the global acceleration for in E-marketing by dint of mobile apps. Really, this area needs more contentious research to maintain sustainability of E-marketing plan into several steps for future. So, in future we can predict that the mobile app developers around the globe carry the biggest responsibility to creating the future of both mobile development and E-marketing.

Figure 7. *Totaled international marketing [22].*

6. Mobile Apps in Electronic Learning

Education quality is communally based on four basic factors are lecturer, student, curriculum and physical setting, see figure 8 [23]. Physical setting factor means educational environment. Education technology plays an important role in the educational environment quality. Electronic learning (E-learning) is the best practice in education development. E-learning is a broad term that encompasses many teaching approaches, types of technologies and administrative practices [24]. E-learning impacts directly in developing countries. The educational material could be made available on hand-held devices such as e-readers or mobile phones especially for

practical analysis or quizzes could improve the level of learning and understanding [24].

Figure 8. *Four main factors affecting in education [23].*

One of the most important research work conducted two surveys, one in 2012 and one in 2014, to investigate students' use of mobile apps [25]. The result analysis indicated that about 95% from students using smartphone see figure 9. While about 30% from students were used android software, when 66% were used iPhone as shown in figure 10.

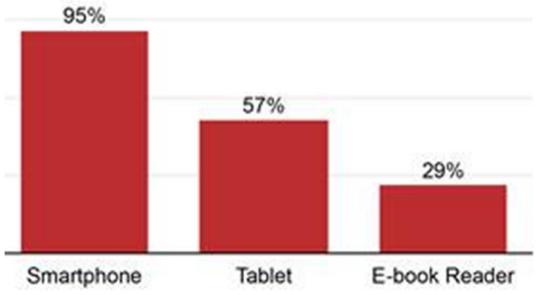

Figure 9. *Device ownership for students [25].*

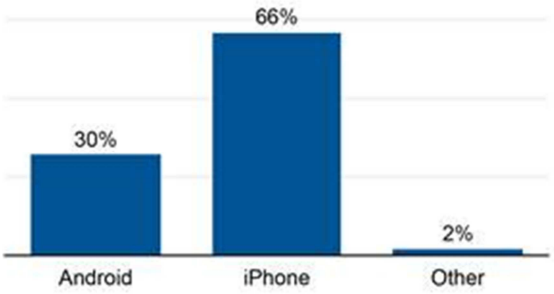

Figure 10. *Smartph1one ownership for students [25].*

Fortunately and for the importance of the subject, the UNESCO foundation organized a week workshop on mobile learning in March 2017 at Pares, France [26]. In the belief of the UNESCO that the mobile technology is changing the way we live and it is beginning to change the way we E-learning. This event aims to expand international understandings using new available technologies for helps the societies to achieve the following goals:

a) Strengthen inclusion in education using high technology
b) Preserve the continuity of E-learning and making it available to refugees and displaced people
c) Highlight the creative abilities for human.

7. Conclusion

In this paper, the mobile apps development for E-marketing and E-learning based on management information system has been presented in details. This work was done to conclude the following recommendations:

a) It is clear that the mobile app has become an important tool used in many applicants. The communications using mobile revolution can reap big profits for company and customer.
b) Mobile app fiend a real solution for optimization of the time that was consumed during the processes of marketing and education.
c) Cloud technology is an economic model represents catch phrase. It is a different way to acquire and manage IT resources in E-marketing and E-learning.
d) Standardization of these issues needed to study for the organization to deal with it safely between the peoples of the world marketing.
e) Some important issues such as intelligent communication management need urgent attention: acquisition of detected data in an economical and efficient way such as extracting the statistical feature of the data.
f) Any growth or innovation in the mobile app software will add value for E-marketing and E-learning technology in the future.

Eventually, if these issues are addressed, the mobile apps development with connectivity will become easy and fruitful task in many applications especially in E-marketing and E-learning.

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