

# Accounting Information Systems: Traditions and Future Directions

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## Abstract

The present discussion highlights the vital role, and responsibilities of financial advisors, financial professional, accountants and auditors not only at present but also day by day, the technology changes in future geared by traditional technologies and automated technologies at the two sides of the same coin about the implementation of accounting information system. Still, there are so many (consequences and) questions still to be answered in future. The present study forecasts and predicts the potential answers to the challenges regarding accounting domain like compliance, financial reporting, internal and external check. The research up to the present writing has identified different technologies like mobile banking, cloud computing, environmental scanning, business intelligence, business process management; computer assisted auditing tools and techniques (CAATT), enterprise integration, big data techniques, web services, mobile devices and so on.

## Keywords

Accounting and Auditing; MIS; Environmental Scanning; Business Intelligence; Mobile Devices; Cloud Computing; Enterprise Application Integration; CAATT

## Introduction

Typically, any Accounting Information System, (famously known as) AIS, is composed of three major sub-systems: (1) Transaction Processing System (TPS) that supports daily and routine business processes and operations; (2) General Ledger and Factory Ledger system and Financial Reporting System (GL/FRS) and (3) Management Reporting Systems (MRS) [1]. Any AIS is a machine based procedure for tracking the accounting and auditing activity supported by information technology and the relevant resources [2]. Almost every type of decision making including financial and non-financial which has any type of affect on processing of business transactions is always based on AIS tools for collection, analysis, storage and manipulations of accounting data (which helps to work more efficiently and effectively). Again, TPS is the foundation stone of daily operations and processes. Three big transaction cycles called conversion cycle coupled with revenue and expenditure cycles. Here, the purpose of this information system is automate and regulate, record and analyse the financial matters in accounting domain being the first to support these activities [3]. Indeed, the development of first computer machine by Charles Babbage provide a corner stone for computer based accounting, especially with the IBM702, which was used in 1953 for accounting. GLS/FRS being the two sides of the same coin or being termed as hand in glove are two closely related mechanisms, with GLS covers recording and summarization while measurement, reporting and decision making being the function of FRS respectively. The output of them may be in the form of tax returns, financial statements, for all the members of the stake holders [4]. MRS, usually provides information and basic inputs for job order costing, process costing, cost, volume and profit analysis, ABC costing, variance analysis, Budgeting (short term and long term), cash flows, payroll and material handling including perpetual and periodic issues, EOQ, internal departmental transfers, bonus and right issues, ratio analysis at one side and preparation of branch accounts (independent and foreign branches), consignment accounts, contract accounts, joint venture accounts, banking transactions along with the bank reconciliation statements, cash books, are prepared at the other side.

Enterprise resource Planning (ERP), is the best answer of this accounting domain, which is a blend and facilitates all vital functions for any organization for implementation [5,6]. Now, the Business Intelligence (BI), and the Balance Score Card System are playing their role to complement and integrate AIS with its offered facilities or so. This current study presents a mirror image, based upon a literature review on the challenges, tendencies, movements, trends and the answers to the domain of AIS and its functions. It also suggests some of the expected solutions and findings to these challenges by uncovering the future challenges.

The organization and sequence of this paper is organized as follows:

The part second highlights the current challenges, tendencies and issues of the modern times while the fact and finding, conclusions, implications, suggestions and the future work is presented in the final section of this paper.

## **Accounting and Auditing Challenges and Tendencies**

UK's University of Bath and CIMA conducted an online survey with 5426 finance professionals worldwide [7]. These financial personnel belong to different parts of the world and these respondents were performing versatile responsibilities classified into six groups namely: (1) accounting operations, which represent activities like debtors and creditors management, financial reporting on internal and external matters including different documentations like statutory reporting, operational and financial risks and leverages, treasury and budgeting issues, corporate financial issues related to taxes, interpretation of available management accounting information, internal audits, short term and long term budgeting issues, standard costing and as well as cash management support system which will include strategic and tactical options, decision making, various personnel and benchmarking responsibility accounting. Hence, there is swing from traditional accounting processes towards the strategic management.

There is a need of S.M. Guidance and network support system which is crying need of the traditional operational book keeping and accounting. The trend against the financial crisis of 2008, which represents valuable addition and contribution towards major corporation worldwide which understand complex type of financial matters and strategic matters of vital importance to the top self-managing teams [7]. The traditional duties regarding business operations, reporting, analysis and interpretations also are important to be discussed in this regard. The word "reporting" used 357 times in the AIS Book of James Hall that shows its real importance and benefits to organization and it also shows what is to be included in the reports for further data analysis and presentations or so. As the latest financial bubble has increased the importance of AIS for all stake holders especially for the investors [7]. One activity called auditing, internal or external called independent audit, encompasses the range of all activities including the audit of financial statements, including compliance of SOP's, reviewing the audit and legal obligations, analysing the operational efficiency and productivity, detecting errors and frauds, within the firms [1]. Internal auditors need to support all types of functional activities with IT technologies help to manage their work and workforce more effectively which help to achieve the goals in well manner way [8].

The external auditor's activities are same like of internal but they mainly focus on the implementation of specific laws, rules and regulations, implementation of reporting standards while preparing the financial statements of any concern [9]. Board of directors and the third party are representative through the internal and external auditors respectively [4,9]. In modern times, the Audit firms are seeking for ways and tools for true and fair view like using technological ways as AIS which help in effective internal controls and checks.

Brainstorming meetings are compulsory to be attended by the members of the engagement teams in order identify potential risks attached with errors and frauds in order to mitigate the effects of these risks. The result is nothing else except to go for Computer Assisted Auditing Tools and Techniques (CAATT's) [10]. Now, appropriate technological responses are the crying need of the

day after the emergence of different time to time financial crisis during the last decade. It is still a challenging environment to the discussion of this paper like in Greece, where the banking crisis be reported in the financial statements. The other side of the picture shows that a reasonable list of duties is always there to be performed by the traditional accountants in spite of having fortnight revolutions in the technologies.

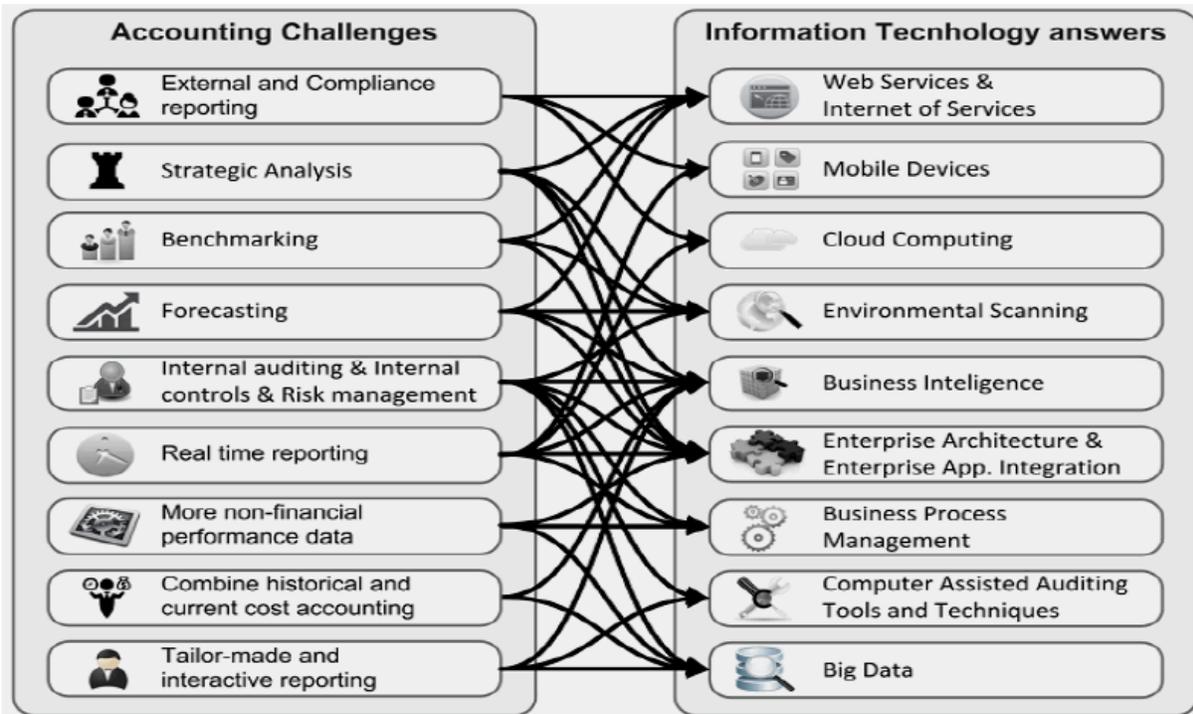
Thus, the literature review shows that most of the accounting concerns [1,10-12] accounting cycle transaction processing, accounts payables and accounts receivables, internal and external financial reporting issues, external reporting statutory meeting and reporting, operating and financial issues, corporate finance issues, risk management and regulations like internal audits, compliance management, tax matters, treasury and audit issues, management accounting job order costing and process costing, cost, volume and profit analysis, budgeting being short term and long term, forecasting, reporting on standard costing which includes variance analysis , management support system, staff recruitment and training and performance appraisal, error and fraud detection etc. Several accounting benefits are provided by ERP technologies which facilitate all this system.

The focus and main gist of this paper is to highlight different challenges that are still unaddressed. These key areas have been listed for future research like strategic and operational analysis, benchmarking, forecasting techniques, internal and external control and checks coupled with internal and external audit to observe true and fair view, risk management and mitigation, analysis of historical data, provision of tailor made and inter active reporting issues, compliance reporting and cloud computing issues.

### **Technology Answers**

Both business and IT managers are in a puzzle how to synchronize and make them compatible with each other to run organization. The successful and profitable companies have aligned them on multi-phase tasks like communication, value, governance, scope, skill and measurement and so many others [13]. This task always need a fresh, perspective and an up to date IT skills to make it operative by using workforce incentives, refresher courses, by process improvement or process re-engineering or even by using clean slate philosophy [14]. Company's productivity in the form of cost efficiency and profitability depends on the positive impacts of AIS implementation and its support network procedures to work better in the organization [15]. According to Ismail and King, if innovations are properly used in SME's by investing in AIS and its allied technologies, the result is increased operational efficiency and productivity or so.

**Figure 1**, highlights the vital current challenges around accountancy and finance field linked with technological and new internet approaches to cope with these modern challenges. There are many relations exit, but we are discussing the most vital features.



**Figure 1:** Current challenges around accountancy and finance field.

Now, we briefly discuss different IT approaches which can respond to each of the above mentioned accounting challenges in the organization.

### Web and Internet Services

Various Autonomous software applications, normally presented by the terms like services, internet or e-services and web services are identified through unique code known as uniform resource identifier (URI), accessed by standardized and customized protocols like HTTP, XML or SOAP [16]. Internet is considered the grass root base for web based communication in the form of intranet or extranet. All the information flow which circulates in the organization in the top to bottom or bottom to top, is supported by Enterprise application Integration (EAI), meaning co-ordination between clients and suppliers. Today, these services facilitate AIS, web applications and operational systems, and this extend real time reporting and external reporting to all the parties having stake with the company. The full time and real accessibility is the ultimate outcome of all of this discussion in this paper. Reduction in liquidity risk and reduction in the selection of adverse suppliers/vendors results in increased financial performance which helps the organizations regarding financial aspects [17]. As a result of this automation, investors and creditors are now well informed stakeholders which results in lower chances of loss and high quality financial and accounting data bank for future plans and execute the existing plans accordingly. Online data is the pre requisite of on line trading and organizations used their web sites to present their data publically and it also fulfils the compliance requirement [4]. It also facilitates in the proper implementation of rules and regulations in order to abide by the government requirements. There

is also a combination of web based and web enabled accounting software which is providing services to the managers. Now, online billing and invoicing is significantly used by every type of business organization supported by Link Point, PayPal and Authorize.net. These provide reliable, valid secure, fast gateways of business transactions.

Now, the new range of services include support framework network for strategic guidance for strategic planning.

### **Mobile Devices**

Mobiles are itself a miracle and its overnight features. Easily portable and awesome apps are amazing and unbelievable. It has revolutionized the society demography; it has a mixed effect on so many old inventions like wrist watches, PTCL Land line telephones, calculators, desktop computer systems, and even on laptops and Tablets. It has now become an integral part of business and communication. Latest technologies are now used as Mobile Banking, Mobile shopping, E-mails, What's APP, Vibre, skype, Imo, Line, EMU and so many other features and applications have increased its use in the communication system of most of the business organization at different levels with different intensity and variety. Yet mobile industry is facing many challenges or hurdles regarding its limitations, network problems, hidden limitations of mobile devices, capacity and speed issues, user distrust in mobile applications, security issues like theft and fraud etc. [18]. The survey conducted by the Oracle with 3000 or more mobile phone users around, show that 24% mobile users read customer reviews on their mobile phones while 55% people commented that they prefer M-Commerce activities to be used by the organizations. The integration amalgamation of this with other allied applications shall result in effective AIS. This highlights that mobile channels will promote and support real time event handling reporting and supporting the communication among original and potential investors, creditors, government agencies, different regulatory authorities resulting in a well informed and well synchronized organization which shall emerge as public friendly organization. The product given by the Micro Strategy called Moile BI, called the business intelligence (BI) solutions, that offers reports and analysis, which helps them to follow the performance of the company from their mobiles to make co-ordination among employees and top management.

### **Cloud Computing**

Now a days, Web and language based accounting software is at its full demand due to the dynamic growth in internet services and advanced technological method are introduced. The use of cloud computing has emerged as one of the best solutions of recording of accounting information efficiently.

Modern days, a use of effective and efficient accounting system which covers all the aspects of inventory turnovers and management of day to day business operations. The use of any type of accounting software always helps the managers to properly manage the business activities in all the matters. As the cloud computing gives the benefits like secure data handling, gives automated

secure business transactions, elimination of duplication, time and cost saving, a system of high levels of security and accuracy with quality of customized services during 24/7 days in week. It refers to a business architecture called SaaS, which means Software-as-a-service [19]. SaaS is better software which focuses mainly on customization rather than standardization. Today an application can run more accurately due to effective software designs and delivery models or so on. It serves the purpose of comparatively lower cost of handling, ownership at one side while higher customized and mass level services given by vendors and offers durable results [20]. The Mckinsey survey also pointed out those companies are considering and adopting more and more this software to the operational part of day to day business activities.

So, all range of stakeholders, take benefits with the availability of these types of data base management systems will be in a better position to access and exploit solid, valid and reliable accounting information for better real time reporting from anywhere there is an availability of internet access. The products like SAGE, Epicor financial Mngt. Microsoft dynamics GP, SAP ERP financials, NetSuite Financials, Intact financials and accounting Systems all serve almost the same purpose that was discussed above.

Difference may arise between in-house accounting or web based accounting due to some technical and language based coding modules. The different modules are core accounting, fund and inventory management accounting, project accounting, billing and invoicing modules, work order management, budgeting and forecasting, payroll and financial reporting modules, fixed asset and human resource management modules or so on.

### **Environmental Scanning**

Environment means and includes all the potential forces, elements, factors which directly or indirectly influence the performance of any business organization constitute its environment, while the term environmental scanning means and refers to all the efforts made regarding acquisition, management and usage of information about different transactions, trends, events and their nature of relationship with the external environmental factors, which would assist the top management called self-managing teams in planning, organizing and all other related functions of management in order to decide the future actions and strategies to compete the competitors with using technique MEP managerial excellence programs. The everlasting strategic decision making is the key to success, yet many organizations still do not pay heed to the dynamic changes in the external environment. There is always a need to develop such a system to gather, manage and arrange external information data bank to be exploited for future strategy formulation and implementation better. We all know that historical data (past and present up to the last day) give us more insights and information for future line of action but also helpful for the proper evaluation of business decisions and implement of these decision effectively. The only focus of conventional accounting should not be the focus on stewardship function [20]. Maximization of revenues and minimization

of cost is also another perspective. The use of any asset for business or at the balance sheet date is also vital and it should be kept in mind how it will be dealt in accounting purposes.

Some experts combine the two i.e. the current methods with those of historical methods. The current cost accounting gains are complicated to adopt with that of environmental scanning processes as it contribute towards building a more complete view of business activities. It manages, in specific terms, more and accurate information about the market competitors and about market trends in general. It promotes the use of benchmarking approach for performance assessment and evaluation or so. Moreover, some risk identification, risk assessment and risk mitigation is possible only through the availability of external information authenticity.

### **Business Intelligence**

Overall POLCA (planning, organizing, leading, controlling and assurance) implementation is strongly facilitated by Strategic management. Organizations need to estimate the overall performance and its progress how to achieve their mission, vision objectives and purpose. BI always work as an active member to explore, extend and develop new business opportunities on both policy levels called strategic and operational called long term and short objectives along with providing result oriented insights for customized decision making. The specialized processes like data mining, data analyses, process re-engineering, process mining, statistical and inferential analysis, simulation and predictive modelling and analysis etc. can support management and accounting challenges like scheduling, forecasting, decision support systems, strategic management accounting systems or so many others. The computer world's survey pointed out that all types of future appointments shall be based upon not only traditional IT skills but also it shall require novel and newer skills like use of cloud computing, business intelligence, online banking and mobile development [21]. The survey proved that highly paid profession will be business intelligence analyst according to 2012 report. Now, there future lies with those professionals who can speak tech and transact business with equal ease.

A new term emerged "accounting intelligence", has been a type of business intelligence, being an expression showing the mixture of technologies used to record, extract, classify and derive information by using accounting and ERP software. The way the information is extracted is the base of classification between AI and BI solutions. Information is the direct outcome of ERP at AI while a query is executed, but in case of classical BI solutions, the data warehouses or OLAP cube is the basis of information generation. The real time information is offered by SAGE, which link directly to data warehouse.

### **Enterprise Architecture and Enterprise Application Integration**

One of the most vital provisions is a holistic or technology based view of enterprise. The formerly unrelated data domains are the ultimate output of efficient and effective system integration [22]. All the guidelines and the instructions to classify and launch interoperability needs, among other phase steps, business enterprise architecture must integrate a clear framework [23]. Usually, the buzz word EAI called Enterprise application Integration is any kind of customized architecture

directly owed to synchronization of applications and modules which must collect process and share to its stakeholders freely. To be effective and operative, called inter-operability feature of any system, i.e., “the ability to share in the information and services”, allows AIS to more reliable, embedded and incorporated.

XBRL, called e-extensible business reporting language, a XML-based computer language, is a globally standardized source of exchanging of business information, due to the commonly used accounting and business reporting. The accounting challenges having a diversified dimensions like forecasting, internal auditing, checks and controls, strategic or operational analysis, benchmarking, future budget planning, risk assessment and risk management, real time reporting procedures combined with the big data bank of non-financial data. The practical examples are available as some firms use batch processing due to application of periodic inventory system which is sometimes called P-system, fixed interval review system or traditional review system of inventory management. But over the nights, almost all organizations are now real time updating their accounting cycle from the General ledger (GL) to ultimate financial reporting systems (FRS) [16]. The objective is to have the real and true picture within a very short period of time, all which depends on level and extent of integration. Theoretically speaking, we can say that now higher the integration results in faster and more reliable reporting.

A relatively sophisticated attempt is practiced by ERP system to synchronized, though ERP does not sustain radically the forecasting, budgeting, reporting, summarizing, analysing, external reporting and then minimum cost allocation with maximum profit orientation. Management Accounting is supported by strategic management enterprise which is based on combined systems of ERP and SEM systems being the key support management system.

### **Business Processes Evaluation and Management System**

While discussing process in Operations and Production Management, it refers to all the activities or set of activities that take the inputs of the organization and transform them into of something of valuable. A list of considerable, thematic and dynamic scheme include like customer relationship management (CRM), Six sigma approach of quality assurance, Enterprise Resource Planning System (ERP), different software used in services or manufacturing sectors, whether national and multi-national or global companies, all refer the process being critical and vital. Research indicates that all types of companies processes whether required process improvement or process re-engineering, needs its proper place in the deployment of different task activities or so.

As we know that processes or operations are the core or critical factor in almost all types of organizations. It is meant how the different things are done by and through other people [24]. It is one of the three main pillars of establishment of any business organization namely people, process and purpose. For example, Kaplan and Norton gave a concept of “Strategy Map” based on the utilization of intangible assets, which influence the speed of internal processes creating high value for customers on priority and for stakeholders in general [25]. Effective decisions are the result of effective and relevant and up to date information system of the organization. To enrich the

reporting quality of the business entity, essential pieces of information must be separated to enhance the workflow and operational information necessary for process accomplishment [16]. The decomposition or break down of different processes is fully supported by the BPM to deliver non-financial data to be used for AIS to improve its efficiency.

The proper administration of operational and strategic level of processes is vital especially with the suppliers through competitive orientation and co-operative orientation tactics applied to avail best quality inputs to start reliable operations. There are 5 M's in production process called Man, machine, materials, management and money, all being vital and can be utilized in a certain proportions in order to make them more result oriented processes. The BPM functionality, being integrated with AIS helps to apply activity based costing (ABC system) of cost allocation during the current of production process. As AIS will furnish us with direct cost and revenue allocation to the cost centers.

### **Computer Assisted Auditing Tools and Techniques (CAATTS)**

Auditors start their work after the end of accounting. Auditors use different software like MS-Excel, Peachtree, Tally software, oracle, ERP modules, Cloud computing and so many others called computer Assisted Audit tools and Techniques (CAATT) to enhance capabilities and financial viability of different issues. They are available from the maximized standard office suite to customized audit command language (ACL) and interactive data extraction and analysis (IDEA) for data mining, data extraction and data analysis in detail [26]. These tools indicate and highlight different types of frauds, errors and misstatements that perform a very thick and extensive range of logical and result oriented including general ledger and factory ledger, payrolls and trial balance calculations to flag outliers, wrong calculations, or the so on like this [27]. To check and ensure the working of key control measures and working of system on the desirable measures, these tools, techniques and measures allow the implementation of these uninterrupted and never ending auditing concepts, which provide a well synchronized and well-coordinated risk assessment and risk mitigation mechanism. This helps in assessing in the company wide risk levels by probing/investing different types of risk indicators by comparing with the historical performance [26].

### **Big Data Model in Accounting and Auditing**

Now-a-days, data ice bergs are generated by the giant companies. Corporate businesses levels deal with a variety and range of financial and non- financial information. Yet, today, the volume of generation of data is multi-dimensional and multi faced as created in the past. Phil Ostwalt, a partner in KPMG, advocates the proper management, collection and analysis of big data challenges which are inherent in audit compliance areas as a result of more and more electronic transactions [26]. Big data plateau is a big challenge for the professionals working in internal auditing, internal controls and risk management areas. These data hills bring new and unique and unfamiliar

challenges to the most of the system developers and this big data paradigm is hold up and supported by different techniques.

### Conclusion and Future Work

This paper at present highlights a list of apprehensions and concerns regarding accounting and finance domain, while the current technology is still not so much responsive at the required level. The present technology expertise available duly recognized and discussed in this paper must be taken as the future directions of research gaps within the specific domain of AIS. No doubt, ERP includes in AIS, but it also includes different emerging mechanism such as like ones discussed in the paper as also vital [28]. So, an extensive research is required to find out new horizons, benefits and potentialities that these different mechanisms can fetch a list of work activities which can be automated though they are not extensively studied in AIS domain, which have a significant impact on accounting functions.

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