2.1 Research Methodology:

2.1.1 Research problem:
The era we live today is the age informatics as the evidence suggests that in the near future will be a need for information is urgent and necessary, and has become the information items of significant interest, although the technical means and methods of collection, production and dealing in them no less important than it, but the reality is that most companies, whether industrial or service not seem interested in using these techniques (data mining) the successful use by linking them with their systems. In brief, it appears that little literature has discussed the impact on the data mining of AIS. Preliminary research of the area done by the researcher showed real world practitioners addressed it as an important issue in AIS, yet there are no guidelines on what are the importance of data mining in AIS at the moment. Therefore, the thesis seeks to address this problem:

There is dearth of the impact of data mining on accounting information systems efficiency and the effectiveness of management decision making.

2.1.2 Importance of the Study

The importance of research of the role of accounting, which was not limited to financial reporting, as is the case in financial accounting or financial information and non-financial for the internal operations of the Company as in management accounting, but are provided with strategic information management for strategic decision-making, through its orientation towards outside the company to customers and competitors, including today called strategic management accounting.
The accounting information systems based on information technology can provide the appropriate information the right time, accuracy, and affordable to help decision makers to support and implement or modify the company's strategy, through the use of Data Mining Technology.

2.1.3 Objectives of the Study

In light of the progress of the research problem and its importance the research aims:

1. Explore the level of data mining awareness and readiness within the Oil Company in India and Iraq.

2. Describe how the application of data mining in the Accounting Information System would impact on the decision-making process.

3. Identify the success factors in accounting information systems.

4. To describe the impact of data mining in AIS performance.

5. Study critical success factors in ensuring data mining in accounting Information systems.

6. Investigate the perceptions of importance of output AIS in all activities company.

2.1.4 Research Hypothesis:

As the result of the accounting environment in which they operate, and the fact that the current environment and future is the information environment and strong competition in the access to the best results in performance evaluation. Became incumbent on the accounting procedure to break the ring of the company and extends to the outside of its borders in order to provide regulatory information for the management to assist
them in making strategic decisions that enable them to survive and grow in such circumstances (competition and change).

Accounting has become an important duty to adapt the tools and means with emerging tools and methods suited to the environment of the times, it came to use a technique of data mining, the most important variables of the current era from which emerged the hypothesizes that search. In order to explore the research problem, the focus of the thesis is on four Hypotheses:

1. There are various factors effecting the variation of data mining in Accounting Information Systems.

2. There is no significant relational between Accounting Information System using Data Mining and Strategic Decision Making.

3. There are various factors effecting in the decision not to utilize Data Mining Technology in Accounting Information system.

4. The data mining Technique (artificial neural networks) in the financial forecasting more accurate than traditional methods of statistical analysis.

**2.1.5 Data Collection:**

This study will proceed in the following stages:-

**2.1.5.1 Primary Data:**

2.1.6.1.1 Data is collected from Survey Questionnaire designed to supplement and enrichment the qualitative data.

2.1.6.1.2 Data is collected from interview questions designed to supplement and enrichment the quantitative data.
2.1.5.2 **Secondary data:**

Secondary data is collected from Annual reports, Books, Journals, Articles in magazines, News papers and from different websites.

2.1.6 **Sample:**

The research sample was determined by three oil companies of both India and Iraq, because there are eleven mixed company in India, three main companies in India IO, BP, and HP. with contribution of the government 90% and 10% private sector, eight companies remaining proportion of 10%, by the government and it has been neglected, on the Iraqi side there are only three companies the government contribution 100% i.e. South Oil Company SOC,NOC,MOC, Hence for this reason I selected three oil company each from India and Iraq.

2.1.7 **Tools and Techniques of analysis used:**

2.1.8.1 Data Mining Technique (Artificial Neural Network), WEKA program.

2.1.8.2 Statistical Package for the Social Sciences (SPSS).

2.1.8.3 Analysis of Variance (ANOVA), & T test.

2.1.8.4 Association Analysis (Correlation and Cross Tabulation).

2.1.8.5 Regression analysis.

2.1.8.6 ARIMA (Autoregressive Integrated Moving Average) Forecasting Time series analysis.
2.1.8 Scope and limitation of the study

2.1.8.1 Scope

The study is undertaken by highlighting the success factors in data mining in accounting information systems to improve decision-making.

The study can also be applied for the similar studies in the following areas.

1. Development of the research model.
2. Testing of the research model through case study in Oil Company
3. Modification of the research model in response to identification of critical Success factors for data mining in AIS.

2.1.8.2 Limitation

The study is limited to three oil companies of India and Iraq because of time and money constrains, There is physical limitation of researcher hence the sample is limited to three companies each from India and Iraq.
2.1.9 Research Model: Figure (1)

**Users** (internal & external)
Top management, investor, stockholders, stakeholders, etc.

Knowledge

AIS with DM (SAP/ERP) with ANN/WEKA

DM

DW

DB

DB

DB

Quality information
- Accuracy
- Timeliness
- Completeness
- Consistency
- Reliability

Source: prepared by researcher
Hence must explain some Terms used in research model and Definitions its such as Data, Information, Knowledge, data warehouse, and SAP

2.1.9.1 Data

Data are any facts, numbers, or text that can be processed by a computer. Today, organizations are accumulating vast and growing amounts of data in different formats and different databases. This includes:

- operational or transactional data such as, sales, cost, inventory, payroll, and accounting
- nonoperational data, such as industry sales, forecast data, and macro economic data
- meta data - data about the data itself, such as logical database design or data dictionary definitions

2.1.9.2 Information

The patterns, associations, or relationships among all this data can provide information. For example, analysis of retail point of sale transaction data can yield information on which products are selling and when.

2.1.9.3 Knowledge

Information can be converted into knowledge about historical patterns and future trends. For example, summary information on retail supermarket sales can be analyzed in light of promotional efforts to provide knowledge of consumer buying behavior. Thus, a manufacturer or retailer could determine which items are most susceptible to promotional efforts.
2.1.9.4 Data Warehouses

Dramatic advances in data capture, processing power, data transmission, and storage capabilities are enabling organizations to integrate their various databases into data warehouses. Data warehousing is defined as a process of centralized data management and retrieval. Data warehousing, like data mining, is a relatively new term although the concept itself has been around for years. Data warehousing represents an ideal vision of maintaining a central repository of all organizational data. Centralization of data is needed to maximize user access and analysis. Dramatic technological advances are making this vision a reality for many companies. And, equally dramatic advances in data analysis software are allowing users to access this data freely. The data analysis software is what supports data mining.

2.1.9.5 SAP

Systems Applications and Products in Data Processing (SAP) is an enterprise resource planning system designed to automate and integrate the majority of the Department’s business processes by sharing common data and automating routine transactions based on programmable system modules.

To effectively manage the security and availability of SAP, it is important that information system controls be established and implemented at each tier or layer of the system’s architecture. SAP is based on a three-tiered client/server model that includes the following tiers:

• **Presentation Server** (SAP Graphical User Interface). After a user logs onto a Department computer, the user clicks on a desktop icon or selects the appropriate menu path to access the SAP Graphical User Interface, which accepts user input and sends requests to the application server to
be processed. The application server processes the user’s requests and sends the results back to the SAP Graphical User Interface to format and properly display the results for the user.

- **Application Server.**
  The application server collectively interprets SAP’s Advanced Business Application Programs. These programs are typically grouped within modules that reflect the business functions they are designed to automate, such as financial accounting, human resources, procurement, and payroll. If an Advanced Business Application Program needs to interact with the SAP database, the application server will format the request and send it to the database server.

- **Database Server.** The database server is the part of the SAP system where the actual data related to the various program modules reside. The database server is responsible for processing requests submitted by the application server to add, retrieve, or modify SAP data.

### 2.2 Review of literature:

The age we live today is the age informatics as the evidence suggests that in the near future will be a need for information is urgent and necessary, and has become the information items of significant interest, although the technical means and methods of collection, production and dealing in them no less important than it, but the reality is that the most companies, whether industrial or service not seem interested in using these techniques (data mining) the successful use by linking them with their systems.

Traditional manner for making information from data was laid on handy interpret and analyzing. This kind of analyzing of data is so slow and also expensive and objective. It hopes computer technology helps when data using and analyzing is above humane ability. Knowledge exploration emphasizes on understandable patterns. Totally, it can be said that rising to the upward knowledge is from raw data that are down knowledge. The study conclusion Data mining is discovering predictable hide information in tremendous data marts and availability possibility of important information in data marts to their owners. Data mining tools can predict future behavior of customers, stockholders and totally stakeholders and raise decision power. The power of data mining is more powerful of other tools. These tools can solve problems that were very time consuming in short time. These tools seek patterns for exploring hide predictable information in data marts.

(2) Ting Yu & etal, (2009), A Data Mining System for Estimating a Large size Matrix in Environmental Accounting, Centre for Integrated Sustainability Analysis, University of Sydney, Australia. AIAI-2009 Workshops Proceedings. This paper presents a data mining system being capable of automatically Estimating and updating a large-size matrix for environmental accounting. Environmental accounting addresses how to correctly measure greenhouse gas emission of an organization. Among the various environmental accounting methods, the Economic Input-Output Life Cycle Assessment (EIO-LCA) method uses information about industry transactions-purchases of materials by one industry from other industries, and the information about direct environmental emissions of industries, to estimate the total emissions throughout the whole supply chain. The
core engine of the EIO-LCA is the input-output model which is in the format of a matrix. This system aims to estimate the large-size input-output model and consists of a series of components with the purposes of data retrieval, data integration, data mining, and model presentation. This unique system is able to interpret and follow users’ XML-based scripts, retrieve data from various sources and integrate them for the following data mining components. The data mining component is based on a unique mining algorithm which constructs the matrix from the historical data and the local data simultaneously. This unique data mining algorithm runs over the parallel computer to enable the system to estimate a matrix of the size up to 3700-by-3700. The result demonstrates the acceptable accuracy by comparing a part of the multipliers with the multipliers calculated by the matrix constructed by the surveys. The accuracy of the estimation directly impacts the quality of environmental accounting.


This study examines the application of cluster analysis in the accounting domain, particularly discrepancy detection in audit. Cluster analysis groups data so that points within a single group or cluster are similar to one another and distinct from points in other clusters. Clustering has been shown to be a good candidate for anomaly detection. The purpose of this study is to examine the use of clustering technology to automate fraud filtering during an audit. Using cluster analysis to help auditors focus their efforts when evaluating group life insurance claims. Claims with similar characteristics have been grouped together and small-population clusters have been flagged for further investigation. Some dominant
characteristics of those clusters which have been flagged are large beneficiary payment, large interest payment amounts, and long lag between submission and payment.


The purpose of this paper is to show that in a time of globalism, companies operate in a business environment in which high speed dictates mutual interactions and, at the same time, requires a radically different approach to data collection, storage, and processing based on an integrated view of the data.

The author believes that frauds in the corporate environment after the fall of the Berlin Wall have to be investigated through the similarity of models under which citizens are subjugated by means of financial machination by the ruling political and economic elites.

The innovativeness of data mining techniques is reflected primarily in the radical turn away from the retrospective data access that used to be typical of decision support systems, toward prospective and proactive information delivery. Data mining is a technique offering undeniable benefits by improving the quality of life and making one's life easier, and bringing more order and responsibility into the behavior of institutions. But on the other hand, data mining poses numerous questions relating to privacy, legality and ethics. The trouble is that there is a permanent threat of using data mining applications beyond the limits of its original purposes.

The New Economy, whose driving force is new information and communication technologies (ICTs), requires new accounting practice
which directs the measuring system to a pattern which connects the value concept and the action that will generate future profit.

The paper is a plea for proactive company actions aimed at strengthening control mechanisms and internal controls. The future will bring a growing demand for forensic accounting services.


This paper explores the effectiveness of Data Mining (DM) classification techniques in detecting firms that issue fraudulent financial statements (FFS) and deals with the identification of factors associated to FFS. In accomplishing the task of management fraud detection, auditors could be facilitated in their work by using Data Mining techniques. This study investigates the usefulness of Decision Trees, Neural Networks and Bayesian Belief Networks in the identification of fraudulent financial statements. The input vector is composed of ratios derived from financial statements. The three models are compared in terms of their performances.

The aim of this study has been to investigate the usefulness and compare the performance of three Data Mining techniques in detecting fraudulent financial statements by using published financial data. The methods employed were Decision Trees, Neural Networks and Bayesian Belief Networks. The results obtained from the experiments agree with prior research results indicating that published financial statement data contains falsification indicators. Furthermore, a relatively small list of financial ratios largely determines the classification results. This
knowledge, coupled with Data Mining algorithms, can provide models capable of achieving considerable classification accuracies.


With an upsurge in financial accounting fraud in the current economic scenario experienced, financial accounting fraud detection (FAFD) has become an emerging topic of great importance for academic, research and industries. The failure of internal auditing system of the organization in identifying the accounting frauds has led to use of specialized procedures to detect financial accounting fraud, collective known as forensic accounting. Data mining techniques are providing great aid in financial accounting fraud detection, since dealing with the large data volumes and complexities of financial data are big challenges for forensic accounting. This paper presents a comprehensive review of the literature on the application of data mining techniques for the detection of financial accounting fraud and proposes a framework for data mining techniques based accounting fraud detection. The systematic and comprehensive literature review of the data mining techniques applicable to financial accounting fraud detection may provide a foundation to future research in this field. The findings of this review show that data mining techniques like logistic models, neural networks, Bayesian belief network, and decision trees have been applied most extensively to provide primary solutions to the problems inherent in the detection and classification of fraudulent data.

Information Management, Innovation Management and Industrial Engineering, China, IEEE Xplore.

Financial Decision Support System (DSS) is the core of corporate management information system, and is also the ultimate goal of the development of accounting information systems. Whereas Chinese financial decision support system is established and development based on the traditional Accounting Information System. Corporate financial data and non-financial data which are outputted by accounting information system are excess, and information is deficiency. They will seriously affect the effective role in the financial decision support system. Faced with these massive structured or semi-structured data, financial decision support systems which apply to data mining techniques can effectively predict the future trend of corporate development, help to create decision information which is made use of the top manager, and raise the competitiveness of enterprises.


The purpose of this study is to investigate the antecedents and consequences of AIS (Accounting Information System) success as how it affects strategic decision making, strategic cost management, and firm performance. Executive vision, employee knowledge, accounting system competency, and IT capability are hypothesized to become the antecedents of AIS success. Also, technology policy is a moderator of the relationships. The results show that AIS success has a positive association with both strategic decision making and strategic cost management that are significantly related to firm performance. All antecedents (executive vision, employee knowledge, accounting system
competency, and IT capability) definitely play an important role in explaining AIS success. Surprisingly, technology policy is not a moderating effect of the relationships. Finally, contribution and suggestion are also provided for future research, and conclusion of the study is presented accordingly.


The concept of alignment or fit between information technology (IT) and business strategy has been discussed for many years, and strategic alignment is deemed crucial in increasing firm performance. Yet few attempts have been made to investigate the factors that influence alignment, especially in the context of small and medium sized firms (SMEs). This issue is important because results from previous studies suggest that many firms struggle to achieve alignment. Therefore, this study sought to identify different levels of alignment and then investigated the factors that influence alignment. In particular, it focused on the alignment between the requirements for accounting information (AIS requirements) and the capacity of accounting systems (AIS capacity) to generate the information, in the specific context of manufacturing SMEs in Malaysia. Using a mail questionnaire, data from 214 firms was collected on nineteen accounting information characteristics for both requirements and capacity. The fit between these two sets was explored using the moderation approach and evidence was gained that AIS alignment in some firms was high. Cluster analysis was used to find two sets of groups which could be considered more aligned.
and less aligned. The study then investigated some factors that might be associated with a small firm’s level of AIS alignment. Findings from the study suggest that AIS alignment was related to the firm’s: level of IT maturity; level of owner/manager’s accounting and IT knowledge; use of expertise from government agencies and accounting firms; and existence of internal IT staff.

(10) Manirath Wongsirn & Jing Gao,(2011); Data Quality issues in Accounting Information Systems Adoption - Theory Building, University of South Australia, Mawson Lakes BoulevardMarch 2011,IEEE.

Data Quality (DQ) issues play a vital role in the process of Accounting Information Systems (AIS) adoption. DQ is emerging as a well-known business problem in modern organizations. Specifically, the level of data quality is critical for all accounting processes, and has a significant impact on business decision-making. It must be noted that modern organizations rely heavily on the use of accounting information systems for their accounting processes. Thus, this research will investigate the DQ issues emerging during the adoption of AIS systems with the aim of developing a framework to guide organizations on implementing an adequate DQ management approach during the system adoption process. This framework will be developed from case studies by collecting qualitative data (interviews).


At present, one can say that a company’s good running largely depends on the information quantity and quality it relies on when making decisions. The information needed to underlie decisions and be obtained
due to the existence of a high-performing information system which makes it possible for the data to be shown quickly, synthetically and truly, also providing the opportunity for complex analyses and predictions.

In such circumstances, computerized accounting systems, too, have grown their complexity by means of data analyzing information solutions such as OLAP and Data Mining which help perform a multidimensional analysis of financial-accounting data, potential frauds can be detected and data hidden information can be revealed, trends for certain indicators can be set up, therefore ensuring useful information to a company’s decision making.


In recent years, the volume and complexity of accounting transactions in major organizations have increased dramatically. To audit such organizations, auditors frequently must deal with voluminous data with rather complicated data structure.

Consequently, auditors no longer can rely only on reporting or summarizing tools in the audit process. Rather, additional tools such as data mining techniques that can automatically extract information from a large amount of data might be very useful. Although adopting data mining techniques in the audit processes is a relatively new field, data mining has been shown to be cost effective in many business applications related to auditing such as fraud detection, forensics accounting and security evaluation.

The objective of this thesis is to determine if data mining tools can directly improve audit performance. The selected test area was the sample selection step of the test of control process. The research data was
based on accounting transactions. The conclusion is that, within the scope of this research, the results of data mining software are more interesting than the results of generalized audit software. However, there is no evidence that the data mining technique brings out material matters or present significant enhancement over the generalized audit software.

(13) Mohd Shaari Abd Rahman, (2008), Utilization of Data Mining Technology within the Accounting Information System in the Public Sector: A Country Study – Malaysia, School of Accounting and Corporate Governance Faculty of Business University of Tasmania.

This study reports on the readiness to implement and the extent of utilization of data mining technologies within the accounting information systems in the Malaysian public sector. Few studies have investigated the implementation of data mining technology in Malaysia. These studies have been within the private sector. In the public sector there have not been any. This study assists in filling this gap by exploring the role of technology, organizational, human resources and external issues such as political intervention are explored. The characteristics of those who choose too, or would be keen to adopt this technology as compared to non-adopters is also investigated.

The results of this study revealed that 25 out of 133 respondents were adopters and had knowledge about the implementation of such technology within their departments. The majority of respondents were not aware of the existence of data mining technology. Results further indicated that while respondents were generally positive about the existing accounting information system they identified improvements and changes that could valuably be made. The study found no difference in gender, job function or utilization groups in terms of readiness to
implement data mining technology but did for the level of education and experience in working with the AIS. The ability to use this type of technology was found to be related to the performance of the AIS. It was found the best model to apply data mining technologies within the public sector would include a centralized data repository linked to a well managed data warehouse integrating a number of existing systems with data mining technology.


Case study and survey methodology were adopted for this research. Case studies in seven Australian organizations were carried out, where four of them were large organizations and the other three are small to medium organizations (SMEs). The key contribution of this thesis is the theoretical framework developed from the analysis of the findings of this research, which is the first such framework built upon empirical study that explored factors influencing data quality in AIS and their interrelationships with stakeholder groups and data quality outcomes. That is, it is now clear which factors impact on data quality in AIS, and which of those factors are critical success factors for ensuring high quality information outcomes. In addition, the performance level of factors was also incorporated into the research framework. Since the actual performance of factors has not been highlighted in other studies, this research adds new theoretical insights to the extant literature. In turn, this research confirms some of the factors mentioned in the literature and adds a few new factors.

Moreover, stakeholder groups of data quality in AIS are important considerations and need more attention. The research framework of this research shows the relationship between stakeholder groups, important
factors and data quality outcomes by highlighting stakeholder groups’ influence on identifying the important factors, as well as the evaluation of the importance and performance of the factors.


The interest in the prediction of corporate bankruptcy is increasing due to the implications associated with this phenomenon (e.g. economic, and social) for investors, creditors, competitors, government, although this is a classical problem in the financial literature.

Two kinds of models are generally adopted for bankruptcy prediction: (i) accounting ratios based models and (ii) market based models. In the former, classical statistical techniques such as discriminant analysis or logistic regression models have been used, while in the latter the Moody’s KMV model was adopted.

This paper follows the first approach (i), and it is based on the analysis of the evolution of several financial indicators during a three-year period. A framework was developed, encompassing a total of 16 models. These differ in the data mining algorithm, the data used (all three years or just the last one) and the input attributes adopted. The experiments were conducted using the new Business Intelligence Development Studio of the Microsoft SQL Server. Very good results were achieved, with performances between 86% and 99% for all 16 models.

The automated computer programs using data mining and predictive technologies do a fare amount of trades in the markets. Data mining is well founded on the theory that the historic data holds the essential memory for predicting the future direction. This technology is designed to help investors discover hidden patterns from the historic data that have probable predictive capability in their investment decisions.

The prediction of stock markets is regarded as a challenging task of financial time series prediction. Data analysis is one way of predicting if future stocks prices will increase or decrease. Five methods of analyzing stocks were combined to predict if the day’s closing price would increase or decrease. These methods were Typical Price, Bollinger Bands, Relative Strength Index, CMI and Moving Average. This paper discussed various techniques which are able to predict with future closing stock price will increase or decrease better than level of significance. Also, it investigated various global events and their issues prediction.

(17) Rajanish Dass,(2006), Data Mining In Banking And Finance: A Note For Bankers, Indian Institute of Management Ahmedabad from:www.

Currently, huge electronic data repositories are being maintained by banks and other financial institutions. Valuable bits of information are embedded in these data repositories. The huge size of these data sources make it impossible for a human analyst to come up with interesting information (or patterns) that will help in the decision making process. A number of commercial enterprises have been quick to recognize the value of this concept, as a consequence of which the software market itself for data mining is expected to be in excess of 10 billion USD. This note is intended for bankers, who would like to get aware of the possible applications of data mining to enhance the performance of some of their core business processes. In this note, the author discusses broad areas of
application, like risk management, portfolio management, trading, customer profiling and customer care, where data mining techniques can be used in banks and other financial institutions to enhance their business performance.


There is a vast amount of financial information on companies. financial performance available to investors today. While automatic analysis of financial figures is common, it has been difficult to automatically extract meaning from the textual part of financial reports. The textual part of an annual report contains richer information than the financial ratios. In this paper, combine data mining methods for analyzing quantitative and qualitative data from financial reports, in order to see if the textual part of the report contains some indication about future financial performance. The quantitative analysis has been performed using self-organizing maps, and the qualitative analysis using prototype-matching text clustering. The analysis is performed on the quarterly reports of three leading companies in the telecommunications sector.


The amount of financial information in today's sophisticated large data bases is huge and makes comparisons between company performance - especially over time - difficult or at least very time consuming. The aim of this paper is to investigate whether neural networks in the form of self-organizing maps can be used to data mine accounting numbers in large data bases over several time periods. By using self-organizing maps, we
overcome the problems associated with finding the appropriate underlying distribution and the functional form of the underlying data in the structuring task that is often encountered, for example, when using cluster analysis. The method chosen also offers a way of visualizing the results. The database in this study consists of annual reports of 130 worldwide forest companies with data from a five year time period. This article explores data mining applications in healthcare. In particular, it discusses data mining and its applications within healthcare in major areas such as the evaluation of treatment effectiveness, management of healthcare, customer relationship management, and the detection of fraud and abuse. It also gives an illustrative example of a healthcare data mining application involving the identification of risk factors associated with the onset of diabetes. Finally, the article highlights the limitations of data mining and discusses some future directions.


Stock index forecasting is vital for making informed investment decisions. This paper surveys recent literature in the domain of machine learning techniques and artificial intelligence used to forecast stock market movements. The publications are categorized according to the machine learning technique used, the forecasting time frame, the input variables used, and the evaluation techniques employed. It is found that there is a consensus between researchers stressing the importance of
stock index forecasting. Artificial Neural Networks (ANNs) are identified to be the dominant machine learning technique in this area.

(21) Ali Serhan Koyuncugil, and Nermin Ozgulbas,(2008), A Data Mining Model for Detecting Financial and Operational Risk Indicators of SMEs, World Academy of Science, Engineering and Technology 46 2008

In this paper, a data mining model to SMEs for detecting financial and operational risk indicators by data mining is presented. The identification of the risk factors by clarifying the relationship between the variables defines the discovery of knowledge from the financial and operational variables. Automatic and estimation oriented information discovery process coincides the definition of data mining. During the formation of model; an easy to understand, easy to interpret and easy to apply utilitarian model that is far from the requirement of theoretical background is targeted by the discovery of the implicit relationships between the data and the identification of effect level of every factor. In addition, this paper is based on a project which was funded by The Scientific and Technological Research Council of Turkey.


Financial losses due to financial statement frauds (FSF) are increasing day by day in the world. The industry recognizes the problem and is just now starting to act. Although prevention is the best way to reduce frauds, fraudsters are adaptive and will usually find ways to circumvent such measures. Detecting fraud is essential once prevention mechanism has failed. Several data mining algorithms have been developed that allow
one to extract relevant knowledge from a large amount of data like fraudulent financial statements to detect FSF. This paper is an attempt to detect FSF.


This thesis objective is to measure the information system implementation. Because of its important role in economics growth, small and medium business enterprises have to increase its capability and human resource in order to win the global competition with foreign economics institution. One technique that can be used to increase its ability and competitive power of small and medium business enterprises is by employing information technologies. With employing information technology, small and medium business enterprises can reduce its production cost and then increase its profitability and competitive power.

Small and medium business enterprises, generally have limited resource if compared with large business. Resource poverty refers to the lack of financial and human resource. Because the lack of financial resource, small and medium business enterprises usually make minimal commitments that are often spread out at different moment in time.

Employing information technologies need more consent than just its implementation, because it didn’t had any quantitative measure. With its absent of quantitative measure, effectiveness and efficiency of information system application cannot be measured directly. This condition brings to indirect measure of information system implementation. The information system (IS) success determinants as an indicator of information systems effectiveness are developed relies on a number of theoretical areas including expectancy theory, theory reasoned
action, theory of planned behavior, theory of acceptance model, social
cognitive theory and innovation diffusion theory. With these theories
combination, determinant of IS success is a function of user related
variables, management variables, external expertise support,
environmental context variables.

(24) Juha Huuhtanen,(2004),Critical Success Factors in
Integration of
E-commerce and Financial Information Systems, M.Sc
Thesis in Accounting, The Swedish School of Economics
and Business Administration.

Efficient integration of financial and e-commerce systems has
fundamentally changed the way modern companies operate. Companies
with integrated information systems gain substantial competitive
advantage by reducing the operating costs, adding value to their
operations and providing their customers with new and innovative
products in much faster pace.

Since information system integration is relatively new field and only little
scientific literature can be found on this subject, the data sources for this
thesis consists mainly of e-commerce books, articles and company
homepages. Also, as the fast pace of information technology innovations
and new products are overwhelming, only the fundamental information
of technologies is provided within this thesis.

The empirical part of the research was conducted in Elisa Corporation
virtual store called Elisa Shop It. The objective was to evaluate, identify
and analyze the critical success factors affecting the integration solution
of the selling side e-commerce and financial information systems within
the company. The conclusion of the thesis provides the management of
the organization an evaluation of the current situation and suggestions for
further development of the company's information system.
Organizations look to enterprise resource planning (ERP) as a significant strategic tool of competition. ERP plays an important role in today’s enterprise management and is beginning to be the backbone of organizations. Although ERP has been recognized as a useful tool, in practice, there are many difficulties in compelling people to implement it effectively. In this case, how to help ERP’s future effective implementation has already attracted some researchers’ attention. The core research developed is focused on critical success factors of ERP implementation.

In this paper, six general accepted critical success factors (CSF) are identified based on the relevant literature: top management support, effective project management, business process reengineering, suitability of software and hardware, education and training, and user involvement. A survey of ERP implementation in Finnish firms was conducted concerned with critical success factors and other firm issues. Data analysis shows that CSF is vital to ERP implementation. CSF may keep the implementation on schedule, within budget, satisfactory to the user, and so on.

This study investigates the status of computer-based accounting systems (CBAS) adoption among small and medium manufacturing firms (SMEs) in the northern region of Peninsular Malaysia. Results show that over ninety percent of the firms have adopted CBAS. The adoption of CBAS, however, is still at the beginning stage as majority of the firms only adopted CBAS in the last six years or less and the depth of the CBAS system adopted is behind that of industrialized countries. The results showed that years of adoption are positively correlated with the overall quality of the CBAS adopted. Further investigations on the relationships between CBAS use items and factors that were expected to affect CBAS use indicate that the maturity stage of CBAS adoption was significantly positively correlated with age of business. However, the results did not find evidence supporting previous research that argued age and size of the firms as well as the type of ownership influence the adoption of CBAS.


This paper uses the evaluation for listed companies’ disclosure level by Shenzhen Stock Exchange as the agency variable of financial accounting information quality, including listed firms in Shenzhen Stock Exchange from 2002 to 2006 as our sample, empirically tests the relation between the quality of financial accounting information and economic performance, and the paper also tests if financial accounting information affects economic performance through corporate governance system channel. Empirical results show high-quality financial accounting information does improve economic performance and corporate
governance is one of the channels, regardless of return on assets or ratio of net operating cash flow to assets as the agency variable of economic performance. But don’t empirically test if there are other channels through which financial accounting information can promote economic performance. Therefore higher-quality financial accounting information is of great significance for economic performance.


This study reviews barriers in implementation by postulating six hypotheses of accounting information system (middle managers, human resources, organizational structure, environmental factors, financial issues, and organizational culture) in companies listed on Tehran Stock Exchange. Finally, some results were obtained in this manner: barrier of organizational structure with 26 percent, middle managers with 26 percent, human resources with 25 percent, environmental factors with 21 percent, organizational culture with 19 percent and finally financial issues with 16 percent were identified as barriers factors influencing on the establishment of accounting information systems in listed companies on Tehran Stock Exchange. Generally to eliminate these barriers, management, financial managers and staff must be trained practically by experienced teachers in accounting information systems to use the specialist and professional managers, to lengthen position of managers, to clear financial issues, to inform benefits of system establishment to company's managers. By giving reward to managers and staff try to encourage these people to use the new system. To justify staff that the establishment of new system would be their advantages; by the lever of
reward, to encourage staff to compete in learning and work with the system in staff and learn to compete with systems that can accelerate performing and implementing the system.


Accounting Information Systems (AIS) as computer-based systems that processes financial information and supports decision tasks have been implemented in most organizations, but they still encounter a lack of Intelligence in their decision making processes. Models and methods to evaluate and assess the Intelligence level of Accounting Information Systems can be useful in deploying suitable business intelligence (BI) services. This paper discusses BI Assessment criteria, fundamental structure and factors used in the Assessment model. Factors and the proposed model can assess the intelligence of Accounting Information Systems to achieve enhanced decision support in organizations. The statistical analysis identified five factors of the Assessment model. This model helps organizations to design, buy and implement Accounting Information Systems for better decision support. The study also provides criteria to help organizations and software vendors implement AIS from decision support perspectives.

The purpose of this paper is to present new approaches in the development of accounting information systems to enable better data management and information creation. The objective is achieved by applying an object-oriented modeling with the use of intelligent agents, according to the needs of users of accounting information. In development of this work, it was observed that a structure based on objects and using intelligent agents enables the development of reports for different users, with gains in the quality of information developed. The major limitation of this work is that it was done on a theoretical basis; however, the practical aspect is yet to be carried out due to the extent of its development. The great advantage of working is to use an object-oriented modeling with simultaneous application of intelligent agents, who carry on the development and analysis of accounting. Thus, the accounting information system is able to meet fully the qualities needed to users, without loss of comprehensibility, relevance, reliability and comparability, even with changes in business model or in accounting standards used. Furthermore, the development of new intelligent agents enables a retrospect on previous year's analysis.


The aim of this study is to investigate usefulness of accounting information system (AIS) for effective organizational performance. AIS is the whole of the related components that are working together to collect, store and disseminate data for the purpose of planning, control, coordination, analysis and decision making. Therefore, impact of AIS on elements of organizational performance such as: performance
management and financial performance is examined. The results of this study show that although AIS is very useful and have effect on organizational performance to listed companies in Dubai financial market (DFM) but, there is no relationship between AIS and performance management.


Corporate bankruptcy always brings about huge economic losses to management, stockholders, employees, customers, and others, together with a substantial social and economical cost to the nation. Therefore, a model predicting corporate failure would serve to reduce such losses by providing a pre-warning for decision makers. An early warning signal of probable failure will enable both management and investors to take preventive actions and shorten the length of time whereby losses are incurred. Thus, an accurate prediction of bankruptcy has become an important issue in finance. The study aims to apply Artificial Neural Networks (ANNs) technique for financial assessment of organizations and to evaluate bankruptcy conditions. This paper reviews the literature on Artificial Neural Network (ANN) and other important methods used for bankruptcy prediction, such as conventional statistical methods and soft computation methods, followed by a discussion of a systematic development process of ANN models. In this research, NN models with Back propagation learning algorithm are trained and tested using data from 50 organizations, the simulation results are encouraging, and the training and testing accuracy is over 97%.
This thesis investigates the application of artificial neural networks (ANNs) for forecasting financial time series (e.g. stock prices). The theory of technical analysis dictates that there are repeating patterns that occur in the historic prices of stocks, and that identifying these patterns can be of help in forecasting future price developments. A system was therefore developed which contains several agents, each producing recommendations on the stock price based on some aspect of technical analysis theory. It was then tested if ANNs, using these recommendations as inputs, could be trained to forecast stock price actuations with some degree of precision and reliability.

The predictions of the ANNs were evaluated by calculating the Pearson correlation between the predicted and actual price changes, the empirical results seem to indicate that at least some of the ANNs were able to learn enough useful features to have significant predictive power. Tests were performed with ANNs forecasting over determent time frames, including intraday. The predictive performance was seen to decline on the shorter time scales.

In this work, two new approaches of a previous system, automatic design of artificial neural networks (ADANN) applied to forecast time series, are tackled. In ADANN, the automatic process to design artificial neural networks was carried out by a genetic algorithm (GA). This paper
evaluates three methods to evolve neural networks architectures, one carried out with genetic algorithm, a second one carried out with differential evolution algorithm (DE) and the last one using estimation of distribution algorithms (EDA).

A comparative study among these three methods with a set of referenced time series is shown. In this paper, authors compared ADANN forecasting ability against a forecasting tool called Forecast Pro (FP) software, using five benchmark time series. The object of this study is to try to improve the final forecasting getting an accurate system.


This paper explores the effectiveness of machine learning techniques in detecting firms that issue fraudulent financial statements (FFS) and deals with the identification of factors associated to FFS. To this end, a number of experiments have been conducted using representative learning algorithms, which were trained using a data set of 164 fraud and non-fraud Greek firms in the recent period 2001-2002. The decision of which particular method to choose is a complicated problem. A good alternative to choosing only one method is to create a hybrid forecasting system incorporating a number of possible solution methods as components (an ensemble of classifiers). For this purpose, researchers have implemented a hybrid decision support system that combines the representative algorithms using a stacking variant methodology and achieves better performance than any examined simple and ensemble method. To sum up, this study indicates that the investigation of financial information can
be used in the identification of FFS and underline the importance of financial ratios.


Statistical arbitrage strategies have always been popular since the advent of algorithmic trading. In particular, Exchange traded fund arbitrage has attracted much attention. Trading houses have tried to replicate Exchange traded fund arbitrage to other stocks. Thus, the objective is to be able to develop a long term pricing relationship between stocks and profit from their divergence from this relationship. In this paper, the researcher has developed a feasible trading strategy on this concept. Artificial neural networks have been deployed to model the pricing relationship between elements in a sector. All prices have been considered at the same instant, thereby allowing us to make trading decisions in accordance with our predictions. Supervised learning algorithms have been used to train the network.


This paper investigates the use of neural network combining methods to improve time series forecasting performance of the traditional single keep-the-best model. The ensemble methods are applied to the difficult problem of exchange rate forecasting. Two general approaches to combining neural networks are proposed and examined in predicting the exchange rate between the British pound and US dollar. Specifically, they are propose to use systematic and serial partitioning methods to
build neural network ensembles for time series forecasting. It is found that the basic ensemble approach created with non-varying network architectures trained using different initial random weights is not effective in improving the accuracy of prediction while ensemble models consisting of different neural network structures can consistently outperform predictions of the single best network. Results also show that neural ensembles based on different partitions of the data are more effective than those developed with the full training data in out-of-sample forecasting. Moreover, reducing correlation among forecasts made by the ensemble members by utilizing data partitioning techniques is the key to success for the neural ensemble models. Although our ensemble methods show considerable advantages over the traditional keep-the-best approach, they do not have significant improvement compared to the widely used random walk model in exchange rate forecasting.

(38) Pradip Kumar Bala,(2010), Purchase-driven Classification for Improved Forecasting in Spare Parts Inventory Replenishment, International Journal of Computer Applications (0975 – 8887)Volume 10– No.9, November 2010, Bhubaneswar, INDIA.

Performance of inventory management depends on the accuracy of demand forecasting. There are many techniques used for forecasting demand in retail sale. Advances in data mining application systems have given rise to the use of business intelligence in various domains of retailing. This research captures the knowledge of classification of the customers using the purchase-based data of customers for improved forecasting.

The model developed in this work suggests a technique for forecasting of demands which results in improved performance of inventory. The suggested forecasting model with the inventory replenishment system
results in the reduction of inventory level and increase in customer service level. Moreover, the model makes use of purchase driven information instead of customer’s demographic profile or other personal data for developing the decision tree for forecasting.


Financial forecasting is an example of a signal processing problem which is challenging due to Small sizes, high noise, non-stationary, and non-linearity, but fast forecasting of stock market price is very important for strategic business planning. This study is aimed to develop a comparative predictive model with Feed forward Multilayer Artificial Neural Network & Recurrent Time Delay Neural Network for the Financial Time series Prediction. This study is developed with the help of historical stock price dataset made available by Google Finance. To develop this prediction model Back propagation method with Gradient Descent learning has been implemented. Finally the Neural Net, learned with said algorithm is found to be skillful predictor for non-stationary noisy Financial Time series.


This research examines and analyzes the use of neural networks as a forecasting tool. Specifically a neural network's ability to predict future trends of Stock Market Indices is tested. Accuracy is compared against a traditional forecasting method, multiple linear regression analysis.
Finally, the probability of the model's forecast being correct is calculated using conditional probabilities. While only briefly discussing neural network theory, this research determines the feasibility and practicality of using neural networks as a forecasting tool for the individual investor. This study builds upon the work done by Edward Gately in his book Neural Networks for Financial Forecasting. This research validates the work of Gately and describes the development of a neural network that achieved a 93.3 percent probability of predicting a market rise, and an 88.07 percent probability of predicting a market drop in the S&P500. It was concluded that neural networks do have the capability to forecast financial markets and, if properly trained, the individual investor could benefit from the use of this forecasting tool.


Financial forecasting has been a challenging problem due to its high non-linearity and high volatility. An Artificial Neural Network (ANN) can model flexible linear or non-linear relationship among variables. ANN can be configured to produce desired set of output based on set of given input. In this paper attempt at analyzing the usefulness of artificial neural network for forecasting financial data series with use of different algorithms such as back propagation, radial basis function etc. With their ability of adapting non-linear and chaotic patterns, ANN is the current technique being used which offers the ability of predicting financial data more accurately.

(42) Chan Man-Chung, Wong Chi-Cheong, & Lam Chi-Chung, Financial Time Series Forecasting by Neural
Network Using Conjugate Gradient Learning Algorithm and Multiple Linear Regression Weight Initialization.

Multilayer neural network has been successfully applied to the time series forecasting. Steepest descend, a popular learning algorithm for back propagation network, converges slowly and has the difficulty in determining the network parameters. In this paper, conjugate gradient learning algorithm with restart procedure is introduced to overcome these problems. Also, the commonly used random weight initialization does not guarantee to generate a set of initial connection weights close to the optimal weights leading to slow convergence. Multiple linear regressions (MLR) provide a better alternative for weight initialization. The daily trade data of the listed companies from Shanghai Stock Exchange is collected for technical analysis with the means of neural networks. Two learning algorithms and two weight initializations are compared. The results find that neural networks can model the time series satisfactorily, whatever which learning algorithm and weight initialization are adopted. However, the proposed conjugate gradient with MLR weight initialization requires a lower computation cost and learns better than steepest decent with random initialization.


In this study the effectiveness of accounting information systems of finance managers of listed companies at Tehran Stock Exchange is evaluated. The results indicate that implementation of accounting information systems at these companies caused the improvement of managers’ decision-making process, internal controls, and the quality of
the financial reports and facilitated the process of the company’s transactions. The results did not show any indication that performance evaluation process had been improved.


Automated Accounting Information System (AAIS) provides a tool for finance department to enhance organizational effectiveness especially in this era of global technology advancement. The study examined the effect of accounting information system on organizational effectiveness with special reference to selected construction firms in the Ibadan metropolis. Specifically, the study examined the effects of accounting information on quality of financial reports and decision making. Purposive sampling technique was adopted in selecting a total of ten personnel from each of the selected companies as sample for the study. A hypothesis was formulated and both descriptive and inferential statistical tools were employed to analyze the data. The results show that accounting information system has effect on organizational effectiveness. Recommendations were subsequently made to both the managers of such organization and government on how the use of AAIS known as ‘Contract Plus– Financial and Project Accounting’ package software can enhance performance in Finance Departments.

This research study is aimed, based on empirical evidence, at measuring the relationship between the use of the Accounting Information Systems (AIS) by the Small and Medium Sized Enterprises (SMEs) in Spain, and firms’ improved performance indicators and productivity. This empirical study is based on a survey carried out among small and medium-sized firms to ascertain the extent to which development and implementation of accounting information systems had taken place, and subsequently an analysis was made as to how much this introduction may impact on improvement in outcome indicators and productivity. As interesting results we have found that there is a positive relationship among the SMEs that use AIS for fiscal and bank management and better performance measures. This research provides value added in accounting literature given the scarcity of works dealing with the relationship between the application and use of AIS and performance and productivity indicators in SMEs in Spain.


ERP system adoption has largely marked the evolution of accounting information systems (AISs). Modern AISs have great potential to influence business performance. The purpose of this study is to examine the influence of the accounting information system in an ERP environment on firm performance. The study investigate the direct effects of top management involvement and external expertise on the AIS, also examine the interaction effect of accounting staff competency
with the AIS and test its impact on firm performance improvement. Conduct an empirical study of 102 Tunisian firms adopting ERP systems. They use the partial least square (PLS) approach for hypothesis testing. The results indicate that top management involvement and external expertise have an impact on the AIS. Furthermore, they show that the accounting techniques used after ERP system adoption influence firm performance. The interaction effect of accounting staff competency with the AIS has a positive impact on firm performance improvement.


Information Quality (IQ) Management plays a vital role in the process of Accounting Information Systems (AIS) adoption. IQ is emerging as a well-known business problem in modern organizations. Specifically, the level of information quality is critical for all accounting processes, and has a significant impact on business decision-making. It must be noted that modern organizations rely heavily on the use of accounting information systems for their accounting processes. There is a growing need for research to provide insights into issues and solutions related to IQ in AIS adoption. This research aims to explore ways of managing information quality and AIS adoption to investigate the relationship between the IQ issues and AIS adoption process. This study has led to the development of a framework to guide the organizations on implementing an adequate IQ management approach during the system adoption process. This research was done on 44 respondents at ten organizations within manufacturing firms in Thailand. The findings of the research’s
empirical evidence suggest that IQ dimensions in AIS adoption provide assistance in all processes of decision making. This research provides empirical evidence that information quality of AIS adoption affect decision making and suggests that these variables should be considered in adopting AIS in order to improve the effectiveness of AIS.


The new business environment has given way to real time economic. This has showed in a substantive acceleration of business measurement, assessment and decision making processes. The role of Accounting Information System (AIS) is vital during the new challenge in business world. Reliability, comparability and relevance in formation has to make financial statements more trustable to users, hence to reach these factors to setup the aims need software package to make helpful way to the organizations. Therefore questionnaires provided and a sample of 105 was chosen from chartered accountent, PhD student and people who are familiar with AIS and software package in companies from Kerala state in India. results show that accounting information systems and software package are highly affect on comparison capability and relevance to financial statement but there was negative result which is show AIS and software package have lowly affect on reliability of them.

(49) V. Vaithiyanathan1, K. Rajeswari, Kapil Tajane & Rahul Pitale,(2013), Comparison Of Different Classification Techniques Using Different Datasets, International Journal of Advances in Engineering & Technology, May 2013, India.
In this paper different classification techniques of Data Mining are compared using diverse datasets from University of California, Irvine (UCI). Accuracy and time required for execution by each technique is observed. The Data Mining refers to extracting or mining knowledge from huge volume of data. Classification is an important data mining technique with broad applications. It classifies data of various kinds. Classification is used in every field of our life. Classification is used to classify each item in a set of data into one of predefined set of classes or groups. This work has been carried out to make a performance evaluation of J48, Multilayer Perceptron, NaiveBayes Updatable, and BayesNet classification algorithm. Naive Bayes algorithm is based on probability and j48 algorithm is based on decision tree. The paper sets out to make comparative evaluation of classifiers J48, Multilayer Perceptron, NaiveBayes Updatable, and BayesNet in the context of Labour, Soyabean and Weather datasets. The experiments are carried out using weka 3.6 of Waikato University. The results in the paper demonstrate that the efficiency of j48 and Naive bayes is good.


Data mining technique is a newly developed tool for statisticians, data analysts, and the management information systems community. It involves searching information through databases for correlations and other non-random patterns. In making business decisions, it is important to recognize patterns of data and relationships among variables in order to discover valuable information. The results will best minimize costs, maximize returns, and promote operating efficiency. In the field of accounting and auditing, there is a vast amount of data accumulated in
electronic form, and therefore data mining technique is proving to be extremely useful. It allows accountants to analyze the data in many different ways. It can sort through the data, summarize the relationship and reveal the information that the accountants need. This paper explores some applications of data mining techniques as an auditing tool, fraud detection scheme and as an instrument for investigating improper payments. It also compares the general auditing software with the data mining software, for the purpose of showing the superiority of the modern data mining technology. This paper further offers guidance to auditors in the use of data mining software.

2.3 Rationale and Contributions Study

After presenting previous studies we see most study in accounting information systems but not take data mining, on other hand all study in data mining to detected frauds by auditor or in accounting theoretical not in practical like investigate of utilization data mining in accounting information systems.

So the proposed research can be justified in terms of Gaps in the literature, the importance of data mining, And Benefits to research.

There are several rationales for the study of AIS. The first ones relate to the changing business environment, the increased use of information systems (IS) and advances in information technology (IT). Increasing business complexity, networks, globalization, shortening product life cycles and the need for cross-functional organizing are the main reasons for companies starting to use Accounting Information systems. Advent of information Technology changed the way in which traditional accounting systems work. Electronically captured data need to be processed, stored and distributed through IT-based Information Systems. Information
Technology has dramatically increased the ability and capability of processing accounting information. However, Information Technology also bring with it some issued that traditional accounting system did not experience one of such critical issues is the data quality.

Most of the information system research into data quality focuses on the theoretical modeling of controls and measurement. For example, there is research on the impact and propagation of error throughout information systems. However, few studies have attempted to understand what causes the difference in AIS data quality outcomes, and what should be done to ensure high quality accounting information. Therefore, there is lack of knowledge of data mining in AIS that can assist organizations to ensure and improve accounting information quality.

Thus, understanding how these factors affect organizations’ AIS performance may be useful to practitioners. Focusing on those factors that are more critical than others will lead to efficiency and effectiveness AIS’s procedures.

First Contribution’s study of success factor of data quality in accounting information systems is addition in characteristic information, most study refer about four characteristic is accurate, timely, integration and stability, addition characterized by reliability.

Second Contribution, study use Artificial Neural Network to effective and efficient utilization of massive amount of financial data to support companies and individuals in strategic planning and investment decision-making. Data mining techniques have been used to uncover hidden patterns and predict future trends.

Third contribution, study provides the best application of forecasting technique which is Neural Network-Multilayer Perceptron technique for
predicting future is WEKA program as analysis techniques of data
mining using as statistics of machine learning.

Forth contribution, study comparative between traditional statistics
(SPSS) and data mining technology to predicted financial ratios.

In brief, the results from this research are likely to help organizations’
top management, accountants, and IT managers obtain better
understanding of AIS. Hence I have decided to undertake the study of
success factors of Accounting Information System with help of Data
Mining Technology in Oil Companies in India and Iraq.