1.1 INTRODUCTION

Indian banking sector has made swift strides in reforming and aligning itself to the new competitive business environment in post globalization era. It has transformed itself according to the latest technology and brought out a major attitudinal change which has revolutionized the concept of customer service. Information Technology (IT) has led to the end of geographically limited banking with the customer being treated as that of the bank rather than that of a branch of the bank. Thus customers can access a bank from anywhere in the world. Thus IT has become an inevitable part of the reforms process in the banking system with gradual development of sophisticated instruments and innovations in market practices.

For the past five decades, banking in India has evolved through distinct phases to reach its current position. The last decade has seen many positive developments in the Indian banking sector. Namely, the recommendations of the Dr. C. Rangarajan Committee\(^1\) (1984) gave a broad framework of computerization in Indian banks. Then, strides in technology at greater pace was accomplished when Narasimhan Committee\(^2\) (1991) paved the way for the reform phase in the banking. Important initiatives with regard to the reform of the banking system were taken in this phase. Important among these have been, introduction of new accounting and prudential norms relating to income recognition, provisioning and capital adequacy, deregulation of interest rates and easing of norms for entry in the field of banking. This was a milestone in banking sector and paved the way for IT to make its foray into the banking system in a big way.
Then, Information Technology (IT) and Telecommunication (COM) have profoundly reshaped the landscape of financial industries. Many new innovative banking strategies emerged from a new or improved banking information systems, which include internet banking, electronic payments, security investments, information exchanges (Berger, 2003). At present banks can provide more diverse services to customers with less manpower.

Now, all banking services, such as electronic payments, loans, deposits, or securities have become heavily dependable on information and telecommunication technology. Information is the lifeblood of the banks, spanning over all the main areas of operations and its integration is a pre-requisite for effective decision making. Due to the complexity of banking services, every opportunity to speed up their performance or to make them more accessible for customers is welcomed by banks. Thus information processing becomes key factor for better service.

The latest IT development increased the information processing speed and quality exchange of information for timely decision making for both banks and customers. Banking sector now feels a high degree of sophistication in work method, which would help in removing monotony and make work life live. Thus the overall structural and attitudinal changes are bought by IT in banking sector. However with improvements, there is a concern among top level management that whether the Information System (IS) investments are yielding the anticipated outcomes. No doubt that IT has opened up new markets, new products, new services and efficient delivery channels for the banking industry. It has also provided the banking industry to deal with the challenges the new economy poses. IT has been the cornerstone of recent
financial sector reforms aimed at increasing the speed and reliability of financial operations and of initiatives to strengthen the banking sector.

IT enables banks in meeting such high expectations of the customers who are more demanding and are also more techno-savvy compared to their counterparts of the yester years. They demand instant, anytime and anywhere banking facilities. In short the banks have to equip from completely regulated sellers market to completed deregulated customers market. As the IS is the core platform in financial service, knowing the efficiency of IS impact on various aspects of bank is an important phenomena.

The bank’s investment in IT shows growth pattern and there are many indications that these trends will continue in future. So, just being a user of information system, the banking sector felt the strategic need of IS. They expect these investments should be used to add the value of the organization. These reasons pressure the importance of measuring the efficiency of IS. This study investigates how efficiently the IS in banks do create value to the organization.

On the other side, the deregulation and technological changes affected the market conditions too, insisted to measure future efficiency needs of information system. Because, the continuous deregulation has made the banking market extremely competitive with greater autonomy, operational flexibility, and decontrolled interest rate and liberalized norms for foreign exchange. The deregulation of the industry coupled with decontrol in interest rates has led to entry of a number of players in the banking industry, which resulted in large number of competitors battling for the same pie. The competition ends in value addition which influences the customer preferences. As they are bound to react to the value added
offerings, customers have become demanding and the loyalties are diffused. There are multiple choices; the wallet share is reduced per bank with demand on flexibility and customization. Given the relatively low switching costs; customer retention calls for customized service and hassle free, flawless service delivery. These changes are creating challenges, and insist the improved efficiency standards in banking information system. Thus the forces and challenges propose the urge to conduct this research. This is the ‘state of beginning for this research’.

1.2 STATEMENT OF THE PROBLEM

Commercial bank, assaulted by the pressures of globalization, competition, and volatile market dynamic, are constantly seeking new ways to add value to their services. Nothing can be an alternate for a better service to be successful in the market. Improvements in quality of services, results in increase of the customer satisfaction can be efficiently transferred into the higher bank profits. With concern about the banking sector all its service are to be back boned by the information system, if it hangs for a movement all activities of an bank will be disturbed. IS is playing a vital role and it has manifested itself in ATMs, internet and mobile banking, plastic money, electronic mail, customer terminals, websites and so on. It is spanning all the areas of operations and its integrations is a pre-requisite for effective decision making.

IS efficiently drives the value of the bank. It is at the top of the minds of managers and policy makers as the first step in understanding superior performance, hence striving for it. It answers the questions regarding the driving forces and its status in IS. The investments in IS is very expensive for the financial institutions, so
the banks are more concerned about effective utilization of IS resource. Here they want to know whether IS can provide the economic value for the banks. Accessing the current state of IS performance is a part of it. This helps to strive superior performance in information system and thus has competitive edge over their rivals.

This study mainly concentrates in IS performance evaluation and uses its outcome to effective utilization of resources, reduces the cost service, refines its strategy and increases the competitive advantage of the banks. This research on the efficiency of the IS in the banks may help to understand

i. Where the efficiency metric differs

ii. How investments in technology should be structured

iii. How to add value to the organization

A better information system has a competitive advantage over others, knowing their information systems efficiency help the planner to bring changes and serve the users by identifying the gap which exist between the customers and information systems.

1.3 REVIEW OF LITERATURE

In this chapter prior literature are reviewed and DeLone and McLean model (D &M) of information system success is introduced and its dimensions are discussed with its metrics.

Uma G. Gupta and William Collins\(^4\) in their paper “The Impact of Information Systems on the Efficiency of Banks: An Empirical Investigation” (1997) reported the results of an empirical study which investigated the contribution of IS to banks in Florida. The interesting findings that emerged from this study are; first,
there is a lack of rigorous analysis and theoretical frameworks that explore the link between IS investments and a bank’s efficiency. Second, top IS professionals strongly feel the need for developing more rigorous cost-benefit methodologies that will help them sell the technology to top management. Third, traditional measures of productivity, such as decrease in operating costs and increase in profits, continue to be the most popular measures of efficiency and return on investments, although these measures may not be suitable for information systems and technologies.

Andreas Soteriou and Stavros A. Zenios in their work “Efficiency, Profitability and Quality of Banking Services, Developed in Order to Implement the Framework in the Practical Setting of a Bank’s Branches” (1997) an operational efficiency mode, a quality efficiency model and a profitability efficiency model were discussed. The use of the models is illustrated using data for the branches of a commercial bank. Empirical results indicate that superior insights can be obtained by analyzing operations, service quality, and profitability simultaneously than the information obtained from benchmarking studies of these three dimensions separately. Some relation between operational efficiency and profitability and between operational efficiency and service quality are investigated.

Seddon P.B in the paper “A Respecification and Extension of the DeLone and McLean Model of IS Success” (1997) discuss the D & M’s (1992) comprehensive review of the empirical literature represents an important step towards consolidating the knowledge of IS success measures. The author argues that the model reflect both variance and process model that diminish the value of the model. The author also suggests a re-specified and extended model of IS use and IS success.
Drury D. H. and Farhoomand Ali in their study “Hierarchical Structural Model of Information Systems Success” (1998) extends the success structure of information systems (IS). A hierarchical structural model is introduced based on the premise that the behavior of successful systems is influenced by a universe of properties common to all successful systems, and by a unique set of properties specific to each class of systems. The efficacy of this model is then tested from data from 382 firms, comparing the decision-makers evaluation of IS success as it relates to two classes of IS (internal vs. external systems). A major problem surrounding the IS assessment literature has been the inability of researchers to isolate the factors constituting the basic structure of successful IS from those comprising their surface structure. While EDI is a very important external system necessitating specific investigation in this study, external validity of conclusions regarding other types for systems requires future research. The process of replication and extension will lead to further refining the existing theories of information system success.

Ezegozie Eze in the work “The Potential Use of Information Technology for Competitive Advantage: An empirical Examination of Nigerian Commercial Banks” (1999) examines the strategic implementation of information technology in Nigerian Commercial Banks (NCB) and found that the strategic implementation of IT improved their competitive position to a great extend. The size could have no / little impact on the strategic use of IT by NCB. The core issues faced by banks today are on the fronts of customer’s service expectations, cutting operational costs and managing competition. For these banks are exploring new financial products and services options that would help them to grow without losing existing customers, only technology can help banks in meeting these objectives. Nowadays customers are being provided with multiple modes of accessing banking transactions, including
Tele-Banking, Mobile Banking, Internet Banking, ATMs and so on. The busy schedule of people requires a greater importance for time management. This can be done through a single window like paying of bills, investment of funds with regular transactions at the banks. The value-added services provided by various service providers like communication sector–phone bill payments, corporate sector–dividend payments or subscriptions, government sector–tax collection, etc., are linked with value-added services provided by banks.

Peter B. Seddon et al in their work “Dimensions of Information Systems Success” (1999) propose a two-dimensional matrix for classifying IS Effectiveness measures. The first dimension is the type of system studied. The second dimension is the stakeholder in whose interests the system is being evaluated. The matrix was tested by using it to classify IS effectiveness measures from 186 empirical papers in three major IS journals for the last nine years. The results indicate that the classifications are meaningful. Hence, the IS effectiveness matrix provides a useful guide for conceptualizing effectiveness measurement in IS research, and for choosing appropriate measures. The author suggests that Cameron and Whitten’ seven questions and the two-dimensional IS effectiveness matrix presented in this paper provide useful ways for framing most discussions about IS effectiveness measurement. Also strongly recommends that when reporting results of IS effectiveness evaluations, authors of reports should always make clear what type of system they were studying, and on whose behalf the evaluation was conducted. The message is simply that different measures are likely to be needed to assess the impact and effectiveness of a system for different groups of stakeholders.
Prof. Dr. Claudia Dr. Philip Powell et.al\textsuperscript{10} in their paper “Conceptualizing Information System Success Towards a 3D-Model” (2000) developed and build on the 3D-Model of IS success to illuminate the issues underlying IS and especially Decision Support System (DSS) success and failure. Using a comprehensive set of altogether 134 identified success contributors, this work has developed the “3D-Model” for IS and DSS. The Model can also be used for planning or evaluating IS/DSS success. The 3D-model for IS improves understanding of the IS success by separating the concept into three fundamental dimensions or levels.

- Technical Development Level
- Deployment to the User and
- Delivery of Business Benefits

At the development level, IS success factors are the complexity of the systems, the quality of the project management, the quality of the technology used, the development methodology used, the degree of user involvement, the professional skills and experience of the development staff, and quality of the data. At the deployment level the success factors are user satisfaction, support and maintenance and the quality of the information generated i.e. its relevance timeliness and accuracy. At delivery level the factors influenced are the level of resource available, competitor’s movement, political social and economical factors. The 3D-model extends the work of D & M model in several ways. One of the main features, the distinction of three investigation levels with filters in between has proven to be very helpful when applying the model and the approach in a number of practical settings.

DeVries and Delwyn Dean\textsuperscript{11} in the study “The Effect of Competitive Strategy on Strategic Information Systems: Empirical Evidence from the World Wide Web” (2001) examines the relationship between a firm’s competitive strategy and its
information system design. The study determines whether firms design the functionality of their information systems to enable their chosen strategy, and if so, whether there is an enabling effect of the information system on the competitive strategy. Empirical data on web site functionality was collected from 160 national banks and matched with competitive strategy. The results suggest that firms pursuing a differentiation strategy utilize more web features, particularly web features for advanced functionality, which provide new online banking service to customers. The effect of strategy enabling web features also results in higher level of web site effectiveness.

Vatanasombut\textsuperscript{12} in the study “Factors Affecting Retention of Customers who are Users of Computerized Applications on the Internet: A Case of Online Banking” (2001) examines how the web-based electronic commerce influenced the customer. As the customers are playing a new role as end users of computerized application whether it undermine the ability of businesses to retain their customers, due to reduction in customers’ search costs, reduce barrier to entry, and diminish distinctiveness of firms. Research findings suggest that there is no fundamental difference between retention factors in traditional business settings and in E-commerce settings user empowerment, perceived security was found to be predictors of retention than commitment.

Arun Rai Sandra S. Lang et.al\textsuperscript{13} in their study “Assessing the Validity of IS Success Models: An Empirical Test and Theoretical Analysis” (2002) empirically and theoretically assess DeLone and McLean's (1992) and Seddon's (1997) models of information systems (IS) success in a quasi-voluntary IS use context. This study clarifies that core theoretical relationship exists between these two models. The study
also supports Seddon's three construct categories (system and information quality, general perceptual measures about net benefits about IS use, and IS behavior), as defining IS success and its impact on nature of IS use.

Sanabel El-Hakeem EL-Attar Peter Seddon et.al\textsuperscript{14} in their study “User Involvement and Perceived Usefulness of information Technology” (2002) discuss an empirical evaluation of three user satisfaction measures for use of computer based general ledger accounting systems. The study concluded that the main determinants of user satisfaction with the general ledger systems are found to be the relevance, content, accuracy and timeliness of the information produced by the system.

Peter Seddon and Siew Kie Yip\textsuperscript{15} in their paper “An Empirical Evaluation of User Information Satisfaction (UIS) Measures for Use with General Ledger Accounting Software” (2002) did not comment directly on D & M model but analysis of the study supports the model strongly. The links from information quality and system quality to the user satisfaction are supported by the study.

William H. Delone and Ephraim R. Mclean\textsuperscript{16} in their paper “The DeLone and McLean Model of Information Systems Success A Ten-Year Update” (2002) discuss many of the important IS success research contributions of the last decade, focusing especially on research efforts that apply, validate, challenge, and propose enhancements to their [D & M model] original model. Based on the evaluation of those contributions, this paper proposes minor refinements to the model and proposes an updated D & M IS success model. Seven of the 16 empirical studies tested the association between “System use” and “Individual impacts” and the association was found to be significant in each of the studies. System use was typically voluntary and was measured as frequency of use, time of use, number of accesses, usage pattern, and
dependency. Individual impacts were measured in terms of job performance and
decision-making performance. All five empirical studies that tested the direct
association between “System quality” and “Individual impacts” found those
associations to be statistically significant. System quality was measured in terms of
ease-of-use, functionality, reliability, flexibility, data quality, portability, integration,
and importance. Individual impacts were measured as quality of work environment
and job performance.

The four empirical studies that tested the relationship between “Information
quality” and “Individual impacts” found the association to be significant. Information
quality was measured in terms of accuracy, timeliness, completeness, relevance, and
consistency. Individual impact was measured in terms of decision-making
performance, job effectiveness, and quality of work.

The authors propose a balanced IS scorecard to include a business-value
measurement dimension, a user orientation dimension, an internal-process dimension,
and a future-readiness dimension. The authors then suggest specific measures related
to each IS BSC dimension. In the original formulation of the D & M model, the term
“impact” was used. Seddon used “Consequences” and “Net benefits” in his
characterization of the outcomes. They have come to prefer the term “net benefits”
because the original term “impacts” may be positive or negative, thus leading to a
possible confusion as to whether the results are good or bad. Also, the inclusion of
“net” in “net benefits” is important because no outcome is wholly positive, without
any negative consequences. Thus, “net benefits” is probably the most accurate
descriptor of the final success variable model may be useful to both Microsoft and the
user community, but each may have a very different definition of what constitutes net benefits and thus IS success.

Hong-Jen Lin\textsuperscript{17} in the research “Information Technology and Cost and Profit Efficiencies in Commercial Banks and Insurance Companies: A Global Comparison” (2004) explored the significance and contribution of information technology (IT) and telecommunication investments to commercial banks and insurance companies all over the world. The important findings are, IT improves the cost and profit efficiencies of these two types of financial institutions uniformly across the developed and developing countries. Second, the impact of IT on the cost and profit efficiencies is more significant for commercial banks than that for insurance firms. Third, newly developed countries outperform developed countries in terms of the contribution of COM to cost and profit efficiencies.

Beethika Saira Khan\textsuperscript{18} in the dissertation submitted in Graduate Division of the University of California “Essays on Diffusion of New Technology” (2004) focuses on how and why agents use new technologies. What affects the adoption of a new technology? How do consumers use the Internet relative to more traditional channels? What is the link between firms’ innovative activity and market share? These are the questions this dissertation addresses. The main results can be summarized as follows: first, the microeconomic determinants of adoption are broad and diverse, functioning through the supply-side, demand-side, or various environmental and institutional channels. Second, consumers may use a new product or channel as a supplement to older and more traditional channels. In addition, the effects of the various determinants of consumer adoption change over time as the new technology becomes more established throughout the economy. Finally, the results
suggest that firms engage in strategic innovative activity in order to maintain market share in a competitive environment. The technology strategies of a firm and its relative market position are likely to depend on its technological opportunities and market demand conditions.

Kozak Sylwester J19 in the paper “The role of information technology in the profit and cost efficiency improvements of the banking sector” (2005) examines the effect of the IT progress on the level of profit and cost efficiency of the U.S. banking industry, over the period of 1992-2003. The research provides the following findings: Comparing values of correlation coefficients between the IT developments and efficiency of banks, the technology had a positive impact and was positively correlated with profit efficiency of all U.S. banks. At the same time cost side has found out a negative correlation between the level of IT implementation and cost efficiency of banks. Negative sign of the correlation means, that with higher commitment to the technology banks can manage to reduce operating costs (labor, amortization, etc). Although IT progress positively influences both, profit and cost effectiveness of banks, the changes of the values of ROA and over the period of 1992-2003 have shown a better banks ability to generate additional profits then to reduce non-interest costs. This observation suggests that intensive technological applications implemented, predominantly by the largest banks, have enabled them to take advantage of the broader range of services, and a larger office and ATM networks to generate higher profits from their assets; however they could not reduce costs of such expansion at the same rate.

Moutaz Abou-Robieh20 in his study “A Study of E-Banking Security Perceptions and Customer Satisfaction Issues” (2005) analyzed the comfort levels
and attitude of users towards online banking and online banking alternatives, and to
determine if a correlation exists between these factors and demographic
characteristics of the respondents. The sample included 100 survey responses from
those completed via the internet, at various banking institutions in Sarasota, Florida,
and those individuals at Argosy University/Sarasota. The findings established that
there was a correlation between respondents’ attitudes towards e-banking and their
comfort level and feeling of security with regard to their age, level of education, and
annual salary. Based on the findings, those respondents who were older had lower
levels of education, and lower annual salaries were not as comfortable and more
insecure carrying out financial transactions over the internet. The inverse proved to
be true for those respondents who were younger, with higher levels of education, and
higher annual salaries as they showed greater comfort with the idea of online banking
transactions.

Subramanian, Girish H.\textsuperscript{21} in his thesis “An Empirical Application of the
Delone and McLean Model in The Kuwaiti Private Sector” (2005) presented the
application of the D & M model in private sector organizations of Kuwait. Seven
organizations representing the seven sectors in the Kuwaiti Stock market participated.
Certain direct associations between the variables in the original D & M model were
supported from initial correlation analysis. Subsequent regression analyses confirmed
these associations. Information quality and system quality impact user satisfaction
was significant. System usage has a significant influence on individual impact. The
correlation analysis was first used to analyze D & M model. Findings indicated that
there were significant direct associations only between Information quality and User
satisfaction, between System usage and Individual impact, Information quality and
System quality, and between User satisfaction and System quality. With the help of
regression analyses, this study reports that as information quality and system quality increase, increases user satisfaction. However, after using stepwise regression, information quality emerged as the key variable and the one that has the stronger effect. Thus, managers may positively influence the success of information systems through increasing the quality of the information produced by their systems. Findings also indicate that system usage increases as individual impact increases.

Deviated Dimension: Organization Impact. Seven items were used to operationally the System Quality variable (i.e) “concern with whether or not there are bugs in the systems, the consistency of the user interface, ease of use, response rates in interactive systems, documentation, and sometimes, quality and maintainability of the program code” Information Quality is “concern with such issues as timeliness, accuracy, relevance, and format of information generated by an information system”. Nine items were used operationally to the information quality dimension. System usage is studied in and it examines the actual use of information systems, the extent of use of information systems in the users' jobs, and the number of information system packages used in the users’ jobs. User satisfaction examines the successful interaction between the information system itself and its users. Individual Impact examines the effect of the information system on the users’ performance. It measures the impact on four work aspects (task productivity, task innovation, customer satisfaction, and management control). Organizational impact examines the influence of the information system on overall organizational performance. These areas include reduction of administrative costs, improvement of organization image, enhancement of internal operations, and customer satisfaction. There are five items measuring the impact of information systems in these areas.
Myles A. Vogel on his dissertation submitted to University of Maryland on “Leveraging Information Technology Competencies and Capabilities for a Competitive Advantage” (2005) closely examines the relationship of IT and competitive advantage using from the resource based view (RBV). This research is supported by a survey that was mailed to 159 Chief Information Officers, winners of CIO Magazines outstanding CIO award. This research concludes that IT capabilities are significantly important drivers of low cost and IT competencies are significantly important drivers of achieving superior customer relations and innovation. Furthermore, it supports that an information technology is competitive advantage to the organization.

R. Hussein H. Selamat and N. S. Abdul Karim discussed in “The Impact of Technological Factors on Information Systems Success in the Electronic Government” (2005) regarding how systems and technologies are being improved and developed, discussions on their effectiveness and evaluation on their success have been continuously debated by researchers, scholars and practitioners. Besides the major concern on IS effectiveness, factors influencing IS effectiveness are also important. Hence, this study was conducted to investigate the influence of technological factors on Delone and McLean’s IS success dimension. Using a survey method, data were gathered from two hundred and one users from four electronic government agencies in Malaysia. The technological factors were represented by IS competency, IS facilities, IS integration, IS structure and user support. The IS success dimensions used in the study were systems quality, information quality, perceived usefulness, and user satisfaction. The relationships between the technological factors investigated, namely; IS facilities, IS competency, IS integration, user support and IS structure, and the four dimensions of IS success; system quality, information quality,
perceived usefulness and user satisfaction. The findings are consistent with previous studies on relationship between the four IS success factors. The main objective of the study was to investigate the relationship between the technological factors and IS success factors. It is clear that the significant relationship between the technological factors investigated and IS success dimensions evidently suggests the importance of the five factors in ensuring successful information systems. The empirical evidence also supports the impact of technological factors that act as the antecedent factors in influencing IS success. Consequently, the study adds to the literature on technological factors influencing IS success that needs more emphasis. Furthermore, the study found strong support on the relationship between the IS success dimensions as proposed by DeLone and McLean model.

The findings indicate that all the technological factors are significantly correlated with the four IS success dimensions. The study concludes that the technological factors investigated were very important in ensuring the successful utilization and implementation of information systems in the electronic government agencies.

**Eric Phillip Simpson** in the research “Examining Employee Satisfaction Customer Service and Customer Satisfaction in a Retail Banking Organization” (2006) analyzed the relationships that exist between these three variables: employee satisfaction, customer service quality, and customer satisfaction in a mid-sized retail bank. Data from three separate surveys collected during the same time period in 137 branches of a regional bank are analyzed using multiple regression analysis to determine whether relationships and interactions exist at a banking center level, while results of the analyses did not show a significant relationship between the variables.
In particular, a UK based study suggested that employee satisfaction can be very low, but employees will continue to work hard to keep customers satisfied and to maximize company profit. Although an employee may not be satisfied with his/her job, they may continue to provide a high level of customer service quality because of their personal beliefs about work.

Tom Wamalwa in the study “The Impact of Internet Banking on Banks: A Descriptive and Evaluative Case Study of a Large U.S. Bank (LUSB)” (2006) supports the alignment of the internet banking strategies with the core business of retail banking of participating banks. The perception of the importance of the vision and mission on the banks’ websites was supported by the data from the study. The data from this study supported the view that participating banks focused their Internet banking services to their target market of 30 to 55 years old population. This age group was the most profitable segment. However, for participating banks to remain competitive, they will have to address the needs of the younger, under 30 years and the older, over 65 years population segments. Data from the study supported the view that online security and privacy were perceived to remain a major concern for online banking services.

Jen-Her Wu and Yu-Min Wang in their work “Measuring KMS Success: A Respecification of the DeLone and McLean’s Model” (2006) proposed and empirically assessed a KMS success model. This was derived through an analysis of current practice of knowledge management and review of IS success literature. Five variables (system quality, knowledge or information quality, perceived KMS benefits, user satisfaction, and system use) were used as dependent variables in evaluating KMS success, and their interrelationships were suggested and empirically tested. The
empirical results of study indicated that the system quality, knowledge or information quality, and perceived benefits had a significantly positive influence on user satisfaction. It can be interpreted as a response to the three types of user expectations about a system: they want their KMS to be of high system quality, have high knowledge or information quality, and provide substantial benefits. In addition, user satisfaction and perceived KMS benefits had a direct effect on KMS use. In the KMS context, it was found that user attitude is affected by beliefs about system quality and knowledge information quality, which then affected KMS use. Users’ beliefs about the KMS quality shape their attitude and this affects their KMS use.

John P. Slone in the dissertation “Information Quality Strategy: An Empirical Investigation of the Relationship Between Information Quality Improvements and Organizational Outcomes” (2006), presented at Capella University set forth contextual and conceptual models relating information quality to strategy and then provided an empirical investigation of the relationship between information quality and organizational outcomes, with information intensity hypothesized as a moderator of that relationship. Data analysis revealed evidence that the relationship between the quality of information and organizational outcomes is systematically measurable. In that measurements of information quality can be used to predict organizational outcomes, and that this relationship is, for the most part, positive. An unexpected finding was that different regression models emerge when stakeholder roles in an information system are taken into consideration. Data analysis did not reveal support for the hypothesis that information intensity moderates the relationship between information quality and organizational outcomes. Decisions require information. Researchers have long recognized and studied the fundamental of complex relationship, and have long recognized that the information available to
decision-makers is often imperfect. Nonetheless, decisions have to be made, often before better information can be made available.

Shirley J. Ho Sushanta K. Mallick in the paper “The Impact of Information Technology on the Banking Industry Theory and Empirics” (2006) concerned with the impact of information technology on the banking industry as banks are the intensive users of IT. The usage of IT can lead to lower costs, but the effect on profitability remains inconclusive owing to the possibility of network effects that arise as a result of competition in financial services. The paper analyzes both theoretically and empirically how information technology related spending can affect bank profits via competition in financial services that are offered by the banks. The impact of IT on profitability is estimated. IT spending has a positive effect on market share. The relationship between IT expenditures and bank’s financial performance or market share is conditional upon the extent of network effect. If the network effect is too low, IT expenditures are likely to reduce payroll expenses, increase market share and increase revenue and profit. The evidence however suggests that the network effect is relatively high in the US banking industry, implying that although banks use IT to improve competitive advantage, the net effect is not as positive as normally expected.

Sanabel El-Hakeem and El-Attar in the study “User Involvement and Perceived Usefulness of Information Technology” (2006) examined and indicated that there were relationship between users’ involvement in the design of IT and their perceived usefulness; it appears that when bank users were involved in the design of IT system, they were more likely to perceive the system as useful. However, the findings showed that there was no relationship between user’s involvement in the implementation and the perception of usefulness of the information technology
system. The users who occupy high hierarchical position tend to perceive IT as more useful than those of lower side of the hierarchy.

Rohmeyer and Paul\(^{30}\) in the research “An evaluation of information security management effectiveness” (2006) examined the factors that influence the effectiveness in protecting information resource. It examines the skills and qualification of the security officer, determination of the level of maturity of the information security program, an assessment of organizational perception of the importance of information to the business and an estimation of the effectiveness of information protection as measured by information security incident and loss experience. The findings says the organization with higher qualified information officers tend to have higher levels of maturity of the information security program and as a result, are more effective in protecting information. Organization provides sufficient support and resources to enable the development of a sound information security program in order to minimize losses associated with breaches of information.

Wu and Joy Wendy\(^ {31}\) in their study “Extending the DeLone and McLean Information Systems Success Model for e-commerce website success” (2007) researcher provided a comprehensive framework for e-commerce websites evaluation by extending the DeLone and McLean information system success model. A new dimension relationship quality is proposed by the researcher. Also it tries to identify the characteristics of E-commerce websites that impact the user satisfaction.

Wang, Dan\(^ {32}\) in his study “Three essays on bank technology, cost structure, and performance” (2006) addresses the issues around the technology and cost structure in commercial banking industries in both industrialized economy (US) and transitional economy (China). In addition, internal and external factors that affect
bank performance, in terms of technical change, technical efficiency and total factor productivity, are examined to provide policy and business implications to regulatory authorities and banking managers. In the first paper the results provide the evidence of the presence of distinct strategic groups and heterogeneous technologies in the US banking industry. The smallest new banks had most advantageous effects by improving their technology, cost efficiency and thus profitability, while these advantages of scale diminish with the increase in size and finally they disappear when the bank size reaches certain level. In the third paper, focus is shifted from industrialized economy (US) to transitional economy, China, where markets and institutional structures are different from those of developed, the impact of banking deregulations/reforms since early 1990s on the efficiency shows positive changes.

Joachim Ackermann et.al\textsuperscript{33} in their study “Better IT Management for banks” (2007) showed that the IT investments are more fruitful when they match the technology strategy with the business strategy implement systems in disciplined way and balance value creation with increased IT capabilities. Indian banks are spending less on IT than other banks and effectively leveraging for competitive advantage, especially private sector banks.

Ilyas-Ur Rahman\textsuperscript{34} in the study “Role of Information Technology in Banking Industry” (2007) proved employees perceive that there is a positive relation between implementation of IT and delivery of service. In other words, Banks are moving towards implementing IT enabled services to deliver better service, improve competitive position and also geographical reach. Competitive pressure and operational efficiency are the lead factors driving towards the implementation of technology. Significant number of customers prefers private banks than public sector
banks to do their banking operations. Reasons for preferring a particular bank are trust in the bank, sense of security and network facilities provided by the banks including flexibility in carrying out transaction. Customers perceive that technology in banking industry has a positive impact on the way the services are rendered to the customers. All sector of banks have respondent that technology implementation has resulted in achieving economies of scale of bank. In case of private sector bank, there is a strong association between the drive to implement technology in the banks and impact on profitability, competitive pressure, and customer needs.

Herschel Gordon Nomdoe in the study “Evaluating Web-Based Information Systems Effectiveness: An E-Service Quality Multi Stakeholder Perspective” (2007) demonstrates that the success of IS deployed within online environments, could be evaluated and measured differently by each stakeholder for the various e-service quality (e-SQ) dimensions within a particular IS context. The study presents the results of an investigation into a web-based IS at a national telecommunications company in South Africa which was evaluated using e-SQ constructs. The study demonstrates the operationalisation of an e-SQ instrument for the purposes of evaluating IS effectiveness amongst multi-stakeholders. Evidence is provided that measuring attitudes of different stakeholders provides a more holistic perspective of IS success. The primary conclusion reached is that by using a step-by-step methodology of IS success measurement, the objective of establishing whether companies have received a return on web-based IS investment, can be achieved. Furthermore, the outcomes of the study has contributed to existing literature on IS effectiveness measurement. In particular, it will add to the existing body of knowledge regarding the use of e-SQ instrument to evaluate multi stakeholder perceptions. This study provides evidence to demonstrate how e-SQ metrics can be
used in IS evaluation; that for a single system, different stakeholders evaluate the various dimensions of e-SQ differently; and that the evaluation of multi-stakeholder perspectives provides a more holistic evaluation of IS effectiveness as opposed to a single stakeholder approach.

Ahmad Mashhour and Zakaria Zaatreh in their study “A Framework for Evaluating the Effectiveness of Information Systems at Jordan Banks: An Empirical Study” (2008) investigated the investment of information systems at Jordan banks and reports the results of an empirical study that evaluates the contribution of IS in the effectiveness of banks operations. The paper measures the factors which determine information systems effectiveness at Jordan main banks. These variables are presumably system decision performance, system usage and user satisfaction among others that are considered the most effective variables in banks performance. According to the authors, IT integrated IS, Software quality, Investment in training, Aligning corporate goals with technological investments, customer services, common monitoring service measurements include:

- The throughput - number of jobs completed in a given period.
- Response time - the time requirement for completion of a job.
- Reliability - the percentage of time the application is available.

Productivity, User satisfaction, and Cost-benefit analysis are the factors that represent the common factors to evaluate the financial Information systems performance.

Qiang Ronnie Jia in his study “IT Service Climate: An extension to IT Service Quality Research” (2008) examined how the SERVQUAL instrument has been used to measure the quality of IT service experienced by business customers. IT service climate has been proposed as an antecedent of IT service quality. This paper
reports on an empirical research project that aims to develop a valid measurement instrument for the IT service climate construct and test the hypothesis that IT service climate is an antecedent of IT service quality. A 14-item measurement instrument for the IT service climate construct has been validated with data from two hundred and forty seven IT systems employees consisting of three dimensions: Service Leadership, Service Vision, and Service. The Study favours that the right IT climate can highly influence the group’s overall behavior and performance.

Sunran Jeon\textsuperscript{38} in the study “Mobile Internet Service: Assessment of Quality’s Perspective” (2008) dealt with mobile internet service from a service operations management (SOM) perspective. Six attributes of mobile internet service were identified to study their relationship with mobile internet service quality. Among these six attributes, ubiquity, reachability, and instant connectivity were found to be key factors influencing mobile internet service quality. From the customer’s perspective, these factors are the essential and foundational attributes affecting mobile internet service quality. The findings of this study also showed that mobile internet service quality has a positive effect on mobile internet service satisfaction which influences mobile internet service continuance intention. However, mobile internet risks, such as loss of money security, or privacy were not significantly affected by mobile internet service quality and did not have a positive effect on mobile internet service satisfaction and mobile internet service continuance intention.

Frank R. Lazzara\textsuperscript{39} in the study “Wiring the Wiregrass: A Case Study of Information Technology Success Factors; Role in West Georgia economic development” (2008) focused to look information technology critical success factors (CSFs) in west central Georgia organizations The research looks at whether these
CSFs are present in local organizations and if these are similar to what exists today in the information technology literature. The study assesses CSFs in four areas. The first two areas concentrate on strategic planning CSFs, innovation, and technology transfer CSFs. The next two areas of the study focus on information technology worker motivational CSFs and critical success factors that assist a company with technology diffusion of innovation. The goal was to determine whether local organizations utilize CSFs in their planning processes and if so, are they unique to the area or are they similar to what exists in current IT literature. The research utilizes personal interviews with those IT individuals responsible for strategic planning and input at their organizations. The study found that local organizations indeed do utilize IT CSFs in their IT and corporate strategic planning yet providing uniqueness to the west central Georgia area.

Stacie Petter and Ephraim R. McLean in their study “A Meta-Analytic Assessment of the DeLone and McLean IS Success Model: An Examination of IS Success at the Individual Level” (2009) assessed the updated D & M IS success model using meta-analysis. The recent additions to the model intention to use and Service quality are evaluated. This study have empirically evaluated the relationships within the D & M IS success model using the quantitative method of meta analysis found that the majority of the relationships posited in the updated D & M IS success model were supported. As business has become more reliant on IT in achieving success within their organizations, IS has become essential. The D & M IS success model provides a framework that can assist in understanding this.

Guohua Feng and Apostolos Serletis in the study “Efficiency, Technical Change and Returns to Scale in Large U.S. Banks: Panel Data Evidence from an
Output Distance Function Satisfying Theoretical Regularity” (2009) provided parametric estimates of technical change, efficiency change, economies of scale, and total factor productivity growth for large banks (those with assets in excess of $1 billion) in the United States, over the period from 2000 to 2005. This is done by estimating an output distance function subject to theoretical regularity within a Bayesian framework. The authors find that failure to incorporate theoretical regularity conditions results in mis-measured shadow revenue and/or cost shares, which in turn leads to perverse conclusions regarding productivity growth. Our results from the regularity-constrained model show that total factor productivity of the large U.S. banks grew at an average rate of 1.98% over the sample period. However, our estimates also show a clear downward trend in the growth rate of total factor productivity and our decomposition of the total factor productivity growth index into its three components, technical change, efficiency change, and economies of scale indicates that technical change is the driving force behind this decline.

R.K. Uppal\textsuperscript{42} in their study “Paradigm Shift in E-Banking: Some Evidence from Indian Banks”(2010), examined the productivity in pre and post e-banking periods and concludes that though there is a paradigm shift in the performance of all bank groups in the post e-banking period, new private sector banks and foreign banks have an edge over Public sector banks. No doubt, PSBs have also progressed but are still lagging behind. This paper stresses on customer–centricism, proficiency in managing assets, technology, skilled staff, transparency, HRD Policies as vital factors to enhance the performance of banks to face the emerging global competition.

Rachita Gulati\textsuperscript{43}, in the study “Estimation of Technical, Pure Technical and Scale Efficiencies of Indian Banks: An Analysis from Cross-Sectional Perspective” (2011) endeared to measure the extent of technical, pure technical and scale
efficiencies of Indian domestic banking industry using the non-parametric technique of data envelopment analysis. The empirical results show that only 9 of the 51 domestic banks operating in the financial year 2006/2007 are found to be efficient and thus, define the efficient frontier of the Indian domestic banking industry, with the TE scores range from 0.505 to 1, with an average of 0.792. Managerial inefficiency is the main source of overall technical inefficiency in Indian domestic banking industry. The new private sector banks dominate in the formation of the efficient frontier. However, the efficiency differences between public and private sector banks are not statistically significant. However, there exist significant differences between large and medium banks with regard to scale efficiency. The objective of this paper is to evaluate the extent of technical (in) efficiency and its determinants in Indian domestic banking industry. Also, the strict ranking of the efficient domestic banks, on the basis of super-efficiency scores, is sought. The overall technical efficiency (OTE), pure technical efficiency (PTE), and scale efficiency (SE) scores for 51 domestic banks operating in the financial year 2006/07 have been computed. The results show that OTE scores range between 0.505 and 1, with an average of 0.792. Thus, the level of overall technical inefficiency (OTIE) in Indian domestic banking industry is to the tune of about 21.8 percent. Out of the 9 efficient banks defining the efficient frontier of Indian domestic banking industry, 5 banks are de nova private sector banks. This highlights that de nova private sector banks armed with the state of-the-art banking technology dominates in the formation of efficient frontier of Indian domestic banking industry. Further, managerial inefficiency (as reflected by pure technical inefficiency (PTIE)) is a more dominant source of OTIE. The study reports a weak ownership effect on the performance of banks since the efficiency differences between public and private sector banks are not statistically significant. A change in
the orientation of PSBs from social objectives towards an ascent on profitability may be the main cause of observed weak ownership effect.

Amit Kumar Dwivedi and D. Kumara Charyulu in their study “Efficiency of Indian Banking Industry in the Post-Reform Era” (2011) seek to determine the impact of various market and regulatory initiatives on efficiency improvements of Indian banks. Efficiency of firm is measured in terms of its relative performance that is, efficiency of a firm relative to the efficiencies of firms in a sample. Data Envelopment Analysis (DEA) has used to identify banks that are on the output frontier given the various inputs at their disposal. The present study is confined only to the Constant-Return-to-Scale (CRS) assumption of decision making units (DMUs). Variable returns to scale (VRS) assumption for estimating the efficiency was not attempted. It was found from the results that national banks, new private banks and foreign banks have showed high efficiency over a period time than remaining banks. The technical efficiencies of sample banking units under CRS models of DEA approach showed more than 90 per cent efficiency.

William H. Delone and Ephraim R. McLean in their study “The DeLone and McLean Model of Information Systems Success: A Ten-Year Update” provides an underpinning framework for measuring IS effectiveness. In the latter 1990's the concept of service-quality was introduced into the IS effectiveness literature. In their updated IS Success Model, Delone and McLean (2003) then included service quality as key measure in the evaluation of IS success.

In 1992, DeLone and McLean presented a “taxonomy” and “interactive” model, which was to “conceptualize” and “operationalize” information system success research. In the original model, “system quality measures technical success”;
information quality measures semantic success; “use”, “user satisfaction”, “individual impact” and “organizational impact”, measure success of effectiveness. These six dimensions are interrelated rather than independent. This model suggests that when an IS system was first created, its features can be observed as some degree of system quality and information quality, then use of the system and are either satisfied or not satisfied with the system, and use of the system will impact the individual’s performance and consequently impact the organization [either positive or negative].

Figure 1.1
DeLone and McLean Model of Information System Success (1992)

In the following ten years, the original D & M model was studied in hundreds of research articles. Many researches had validated the dimensions and confirmed the interrelationships between the dimensions of the model. Some researchers suggested modification (Seddon 1997); but overall, it’s been proven to be valuable and effective analytical tool in evaluating IS success.

In 2003, DeLone and McLean concluded the research findings of over 100 D & M model studies, and presented the updated D & M model (Figure 1.2). The major revision is the addition of a new dimension “Service quality”. According to the author, as Information technology evolved and environment changed, new challenges emerged; the original model had to be adjusted in order to perform more accurate measurement tasks. They also indicated that previous information system
effectiveness measures usually emphasize the product quality and tend to ignore the importance of service quality; this may lead to the improper measurement, and results in inaccurate conclusions. The two dimensions “Individual impacts” and “Organizational impacts” in the original model were collapsed into new dimension “Net benefits”. This new dimension was an attempt to incorporate the “ever growing number of entities” that will be impacted by “Use” and “User satisfaction”.

Figure1.2


The authors defined this dimensions, in order to keep the model parsimonious; in the practical use, this dimension can be defined differently subject to the goal of the study (DeLone and McLean 2002). This new model measures IS success in terms of more up-to-date dimensions, and become more robust for information system success evaluation. In their opinion, although new forms of business are emerging, information technology still serves the same fundamental purpose as before. And believe information system success and its ‘underlying dimensionalities’ have not
changed. Thus, applying measures for information system success banking IS is viable (DeLone and McLean, 2003).

**Information Quality**

Information quality has always been considered as one of the major factors that impact user satisfaction. It measures the information processing itself. If the information processing is better the users (internal) get satisfied. When the internal users are satisfied they positively contribute to the organization.

Metrics used to measure information quality are as follows:

- **Timeliness**: Right Time; Accessibility; Currency.
- **Completeness**: Accuracy; Completeness; Informative; Conciseness; Sufficiency.
- **Presentation**: Precision; Format; Easy to read; Uniqueness; Clarity.
- **Relevance**: Needed information.
- **Security**: Privacy; Reliability.

**System Quality**

System quality reflects the interactions between information system and the users (ie) it measures the information processing itself. The level of interactivity of information system and overall performance increase use and user satisfaction.

Metrics used to measure System quality are as follows.

- **Adoptability**: Ease of use; Easy to learn; Integration.
- **Availability**: Documentation; Maintainability; Control; Storage.
- **Reliability**: Trust; Output quality.
- **Response Time**: Waiting time; Data capture; Fastness; turnaround time.
- **Usability**: System design; System feature; storage.
**Service Quality**

Service quality measures the service of information system suppliers. Service quality as a key factor impacts the successfulness of organizations, deeply ingrained service quality orientation often develop both culture and reputation which tend to be very enduring and difficult to copy.

Metrics used to measure system quality are as follows:

- **Responsiveness**: System problems; System struck.
- **Assurance**: Service support; Modification.
- **Empathy**: Understanding; Cooperation.

**System Use**

It measures the recipient consumption of information. Everything from nature of use, usage pattern of system within the site, information retrieval, and extent of use are the measures of usage.

Metrics used to measure System usage are as follows

- **Nature of use**: Planning; Handling transactions; Decision making; Communications.
- **Usage pattern**: Sharing documents; Building relationship.
- **Quality**: Time saving in routine work; Job handling.
- ** Appropriateness**: Purpose; Actual use; Data supply; Reports generated.
- **Extent**: Frequency; Total time; Report requirement; No of inquiries.

**User Satisfaction**

Recipient response to the use of information system, “User satisfaction” remains an important means of measuring our customers’ opinions of information system and should cover the entire customer experience cycle.
Metrics used to measure user satisfaction are as follows:

Quality of work : Impact on work; Innovation; Time consumption; Job performance.

Training : Participation; Support; Adequate training.

Comfort ability : Easier; Enjoy the job; Satisfaction; Stress.

Career development: Promotion; Opportunity.

**Net Benefits**

“Net benefits” are the most important success measures as they capture the balance of positive and negative impacts of information system on the customers, suppliers, employees, organizations, markets, industries, economies, and even the societies. “Net benefits” success measures are most important, but they cannot be analyzed and understood without “System quality” and “Information quality” measurements. The effect of information system on organizational performance can measured as the metrics like.

Cost saving : Training; Market; Administrative.

Integration : Image; Internal operation; Cooperation.

Productivity : Speed; Service Time; Man power;

Incremental growth : Service; Volume of Service; ROI; Growth;

Strength of software : Application; Scope of the software.

Competitive Advantage: Weapon; Substitute product; Proactive; Problem identification.

Expanding the Market : Retain customer; Offer more service; Value added service;

Customer orientation.
1.4 SCOPE OF THE STUDY

The Nationalized and Private Banks are interested in knowing their level of efficiency to compete in the market with better strategy. The study has been undertaken to measure the efficiency of information systems in Nationalized and Private Bank’s internal user’s point of view using Delone and Mclean model (D & M model). The internal users assess the information system of their bank using D & M model’s six dimensions such as system quality, information quality, service quality, system use, user satisfaction and net benefits. The study is confined to Coimbatore district. The sample respondents are the internal users of various selected Nationalized and Private Banks. As such, there is a scope to examine whether the efficiency of banking information is in which level of standards to reach organizational performance.

1.5 SIGNIFICANCE OF THE STUDY

Banking sector is challenged by the global issues and global market and also suffers by the uniqueness of the standards of measures of efficiency. There are various bench marks for accessing the efficiency. The models like profit- cost oriented model are sufficient in project the cost-profit efficiency of information system. But it will be better if the model can access the various qualities of an information system in organizational context. Model like Delone and Mclean can access the overall efficiency information system in the organizational context as a whole. In this context, the proposed study on measuring the efficiency of information systems in banks using Delone and Mclean model with reference to internal users of Nationalized and Private banks, in Coimbatore may be considered important to
examine the efficiency of information systems in overall organizational context, can help full for the policy maker to identify and trace the metrics.

This research on banking IS efficiency may help to understand where the efficiency metric differs, how investments in technology should be structured and how to add value to the organization. A better information system is one of the means to competitive advantage over others, knowing their information systems efficiency help the planner to bring changes and serve the users by identifying the gap exist between the users and information systems.

1.6 OBJECTIVES OF THE STUDY

The following are the objectives of the study:

i. To study the socio-economic condition of employees in Public and Private sector banks in Coimbatore district.

ii. To examine the accessibility of DeLone and McLean model in measuring the efficiency of information systems with reference to Public and Private sector banks in Coimbatore district.

iii. To identify the metrics of information systems intervene net benefits of Public and Private sector banks in Coimbatore district.

iv. To measure the service quality of information system suppliers in Public and Private sector banks in Coimbatore district.

v. To evaluate the efficiency of information systems in Public and Private sector banks in Coimbatore district using DeLone and McLean model.

vi. To portray the findings and offer suitable suggestions to improve the information systems of the selected bank group.
1.7 PERIOD OF THE STUDY

The data collection period of the study was six months starting from August, 2010 to January, 2011.

1.8 OPERATIONAL DEFINITIONS

Several key terms, concepts, and definitions are presented in this section based on a review of existing literature. These items serve as a basis for this research.

Reserve Bank of India

Reserve bank of India was constituted in 1935 under the Reserve bank of India Act,1934, to “regulate the issue of bank notes and the keeps of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantages”. Under the banking regulation act, 1949, (previously known as the banking companies act, 1949), the bank is vested with large powers of supervision, control, direction and inspection of scheduled and non-scheduled banks.

Commercial Banks

Commercial Banks are simple business or commercial concerns which provide various types of financial services to customers in return for payments in one form or another, such as interest, discounts, fees, commission, and so on. Their objective is to make profits. However, what distinguishes them from other business concerns is the degree to which they have to balance the principle of profit maximization with certain other principles.
**Dr. C, Rangarajan Committee**

In the early 80s, a high level committee was formed under the chairmanship of Dr. C. Rangarajan, then Governor of the Reserve Bank of India, to draw up a phased plan for computerization and mechanization in the banking industry over a five year time frame of 1985-89. The focus by this time (justifiably) was on customer service and two models of branch automation were developed and implemented. Having gained experience in the earlier mode of computerization, the second Rangarajan Committee constituted in 1988 drew up a detailed perspective plan for computerization in banks and for extension of automation to other areas like funds transfer, electronic mail, BANKNET, SWIFT, ATMs etc. The Committee recommended the following road map for computerization over the next five years from 1990-94.

**Narasimhan Committee (1998)**

The Committee was first set up in 1991 under the chairmanship of Mr. M. Narasimhan who was 13th governor of RBI. Only a few of its recommendations became banking reforms of India and others were not at all considered. Because of this a second committee was again set up in 1998. As far as recommendations regarding bank restructuring, management freedom, strengthening the regulation are concerned, the RBI has to play a major role. If the major recommendations of this committee are accepted, it will prove to be fruitful in making Indian banks more profitable and efficient.
Banker

A banker is one who, in the ordinary course of his business, honours cheque drawn upon him by persons from and for whom he receives money on current accounts. They must take deposits account, open current accounts, issue and pay cheques, and collect cheque for customers.

Customer

A person who has an account with a bank is considered its customer. A person who has a bank account in his name and for whom the banker undertakes to provide the facilities as a banker is considered to be a customer. The dealing between the banker and customer must be of the nature of banking business.

Customer service

Customer service is the set of behaviours that a business undertakes during its interaction with its customers. It is the degree of assistance and courtesy granted to those who patronize the organization. It is anticipation and identification of customers' needs and expectations and taking action for positive customer satisfaction. It consist codes of ethics, etiquette, behaviour courtesy and so on.

Information Systems (IS)

Interrelated components that collect, process, store, disseminate information to support decision making, control, analysis, visualization in an organization.

Information Technology (IT)

Information technology (IT) is devoted to: (a) application of data and the processing thereof, and (b) the development and use of hardware, software,
telecommunications, Internet, firmware, and procedures associated with information technology. IT encompasses various forms such as business data, still images, voice conversations, motion pictures, and multimedia presentations.

**Competitive Advantage**

Competitive advantage includes the resources, capabilities, competencies, assets, and processes that provide the enterprise with a distinct attraction to its customers and unique advantage over its competitors. The enterprise attracts and retains customers by virtue of its advantages. These advantages define the customer’s value proposition and differentiate an enterprise from its competitors.

**Efficiency**

Efficiency is the achievement of the ends with the least amount of resource.

**1.9. METHODOLOGY**

**1.9.1 Sampling Design**

The study is to examine the efficiency of information systems in SBI group, Public and Private sector banks group in Coimbatore district. A study of this nature requires the selection of a suitable place. Since the district is growing and has a potential scope for industrial development, it was selected as source of research.
Table No. 1.1

GROUP-WISE PUBLIC AND PRIVATE SECTOR BANKS AS ON MARCH, 2011

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Banks</th>
<th>Total branches</th>
<th>Sample selected for study (Branch wise)</th>
<th>No. of respondents selected</th>
<th>Total respondents</th>
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<tr>
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<td>State Bank of Mysore</td>
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<td>State Bank of Patiala</td>
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<tr>
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<td>Tamilnadu Mercantile Bank</td>
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<td>Vysya Bank Ltd</td>
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</table>

**Source**: Banks Total branch data derived from the report 2011, Canara bank, Lead bank of Coimbatore district
To fulfill this, collection of primary data from the employees of SBI banks, Nationalized and Private banks group in Coimbatore district become pertinent. For this purpose, a list of SBI bank group, Nationalized and Private bank group operating within the Coimbatore district was prepared. To prepare this list, the relevant data were obtained from Canara Bank, the lead bank of Coimbatore district. There are totally 42 banks with 433 branches of banks (SBI, Private and Nationalized banks) spread over Coimbatore district. Of these, 6 banks with 68 branches are SBI bank group, 19 banks 248 branches are Nationalized bank group and 17 banks with 117 branches are Private bank group.

A sample of 39 banks in SBI, Nationalized and Private bank group, which is having more than two branches, has been selected at stratified random sampling method from these broad categories of banks. Hence, the study has totally 6 SBI bank group, 18 Nationalized bank group and 15 Private bank group, the sample of 39 banks thus selected for the study by adopting the method of stratified random sampling method is fairly representative. A list of SBI banks, Nationalized and Private banks selected is provided in the table.

1.9.2 Data collection

The questionnaire was designed and tested using pilot study and finalized. It was used to collect the primary data from the respondents. For the purpose of analysis, the data has been collected from 496 internal users from the sample banks group in Coimbatore district. The above said samples have been selected on the basis of random sampling method. However, due to part filling of questionnaire, as much as 106 sample respondents have been rejected and 390 sample respondents have been
finally accepted for a critical analysis and interpretation. The data has been tabulated and statistically interpreted whenever and wherever needed.

The study area is limited to Coimbatore district. Coimbatore, the second biggest city of the southern state of Tamilnadu, is identified as one of the fast developing metros of India. The city of Coimbatore called as the “Manchester of South India” with a salubrious climate. The city is endowed with large number of educational institutions, textile mills, foundries and agro based industries. It is also known for the manufacturing of the centrifugal pump sets and a host of engineering goods. Hill stations like Ooty, Kodaikanal, Mudumalai –wild life sanctuary and Top slip are within easy reach from Coimbatore. It is connected by air with Chennai, Trichy and Mumbai. It is the 3rd largest city in Tamilnadu. It is poised for a spectacular growth in the near future. The Coimbatore district, being an industrial area, many Public, Private and Foreign banks have established their branches here.

1.9.3 Tools and Techniques

The primary data collected for the study was analyzed with the appropriate statistical tools and techniques. Based on the objectives of the study, the following statistical tests were identified and applied to solicitate the results of the research. The following tests were applied to SBI bank group, Nationalized and Private bank group.

i) Descriptive Analysis

ii) Analysis of variance (ANOVA)

iii) Garrett Ranking Techniques

iv) Reliability Analysis

v) Factor Analysis
vi) Multiple Regression and Inter-Correlation
vii) Friedman Rank Test and
viii) Weighted Average Score Analysis.

1.9.4 Hypotheses of the study

The following null hypothesis has been framed by the researcher:

1. There is no significant difference between socio economic factors and overall opinion about the efficiency of information systems in the selected banks group.

2. There is no significant relationship between the net benefits and employee’s attitude towards factors contributing to information quality, system quality, service quality, system use, and user satisfaction in selected bank group.

1.10 LIMITATIONS

According to the research framework the study is prone to certain limitations in terms of place, time, attitudinal change and technical advancements.

1. The study is confined to Coimbatore district only; it can be extended to the other districts to project the elaborated scenario of the study.

2. As the duration of the data collection period was limited to six month period the results exactly match with the scenario which prevailed over that period. The change of attitude of the respondents and technological advancements and its implications may deviate the results of the study.

3. The Foreign banks group and Co-operative banks group excluded in the study may limit the complete scenario of the banking service.
1.11 CHAPTER SCHEME

The first chapter deals with introduction, statement of the problem, review of the literature, objectives of the study, scope of the study, conceptual definitions, methodology, limitations of the study and chapter scheme.

The second chapter deals with the design and application of the DeLone and McLeon model of information system success.

The third chapter assesses the socio-economic status and opinion on information system with reference to internal users of the selected bank group.

The fourth chapter provides model accessibility and application of the model to access the efficiency of selected bank group by the internal user of information system and to assess the best bank group based on the information system efficiency.

The fifth chapter portrays the findings, suggestions, conclusion and future scope of the study.
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