5.1 INTRODUCTION

Technological advancements in IT have been greatly responsible for widening and deepening of the markets, sophistication of the instruments and soundness of the banking system. This resulted in stimulating the demand for banking. It has contributed to some extent to the process of globalization and liberalization too. Due to application of IT, there is an increase in return, high productivity and growth in banking.

In the next generation banking, new dynamics of competition exists. To be efficient in the competitive market they have to identify their strength and weakness thoroughly. Knowing the IS efficiency is core factor to design their competitive strategy. As the D and M model is using the organizational context to measure the efficiency of IS, it is one of the apt model to measure the strength and weakness. So the banks can build up the strength and rectify the weakness to meet the challenges of future banking. Such that they have to gear IS system to the future needs. Efficiency evaluation helps the bank to stretch to achieve new goal of efficiency standard and take it to the international standard.

IS helps to improve the operational efficiency, promote business, and build strategic information system. Thus IS supports the competitive strategy to tackle the competitive force. IS success is based on the successful integration of IS with the competitive strategy.
5.2 FINDINGS

5.2.1. Findings of Public Sector Bank Group

The findings about SBI bank group and nationalized bank group are listed below. To be more specific and for convenience of bank group, public sector banks has been separately listed as SBI bank group and nationalized bank group.

5.2.1a Findings of SBI bank group

- The clerical staff respondents of SBI bank group were 43.2 per cent. It is a major percentage among the total respondents. Among them 53.8 per cent of them were accounted ‘no extent satisfied’ level opinion about information system efficiency what they used.
- Designation of the respondents and opinion about the efficiency of IS significantly differs in SBI bank group.
- Among the total respondents 45.5 percent of the respondents were above 50 years age group. According to the age group opinion about the efficiency of IS significantly differs in SBI bank group. The generation gap exists among the respondents.
- Among the total respondents 73.3 per cent of the internal users of SBI bank group were trained in bank itself, among them beyond the common computer literacy base the difference of opinion exist about the IS efficiency.
- The majority respondents of the SBI bank groups’ socio-economic profile were designation wise clerks, education wise graduates, gender wise male, age wise above 50 age group, computer literacy wise trained in bank itself and computer skill wise having operating skill.
Using garret ranking technique the respondents of SBI bank group ranked the reasons for selecting the SBI banks group, the ‘Economic status’ as first and ‘Self interest’ as second, which shows the respondents perception of association with SBI bank group.

The information quality and net benefits dimensions’ variables Cronbach’s alpha coefficient values were above 0.95 and service quality, system use dimensions’ variables Cronbach’s alpha coefficient values were above 0.83 which shows all the dimensions and their variables were having good estimate of internal consistency and indicate the D & M model construct is highly reliable to the IS efficiency in SBI bank group.

Net benefits express the performance of the organization. Identifying the factors influencing the net benefits help the banks to design their competitive strategy. The factor analysis shows the major influencing factors and their order of preference are critical success factors, internal strength and quality of service, value added service of IS and customer service.

Multiple regression and inter correlation for SBI bank group proves that net benefits is significantly correlated with the information quality, system quality, service quality, system use and user satisfaction dimension.

The respondents perceive the impact of information quality, service quality and system use on net benefits is higher where system quality and user satisfaction impact on net benefits is lower in SBI bank group.

Friedman ranking of the service quality of IS of suppliers of SBI bank group reveals the variables ‘Communication between user and supplier is good’ with the mean
score of 3.88, the variable ‘Good rapport exist with the supplier’ with the mean score of 3.23, and variable ‘Supplier cooperation is good when ever required’ with the mean score of 3.23 were found weak.

- Weighted average score analysis for individual SBI banks related to IS efficiency dimension were listed. Weighted average score of information quality dimension in State Bank of Patiala (3.3 WAS) were found weak.
- The system quality dimension in State Bank of Hyderabad (3.2 WAS) and State Bank of Patiala (3.1 WAS) were found weak.
- The service quality dimension in State Bank of Hyderabad (2.4 WAS), State Bank of Mysore (1.9 WAS), State Bank of Patiala (1.8 WAS) and State Bank of Travancore (1.8 WAS) were found weak.
- In system use dimension State Bank of Patiala (3.3 WAS), State Bank of Travancore (2.8 WAS) and State Bank of Mysore (2.7 WAS) were identified as weak.
- In user satisfaction dimension State Bank of Mysore (2.9 WAS), State Bank of Travancore (2.6 WAS), State Bank of Patiala (2.3 WAS) were found weak.
- ‘Report delivery’ (3.45 WAS) variable in ‘timeliness’ metric and ‘personalized information’ (3.98 WAS) variables in ‘relevance’ metric in information quality dimensions were to be improved in SBI bank group.
- ‘Cost effectiveness’ (3.6 WAS) variable in ‘availability’ (3.62 WAS) metric and ‘easy to use’ in ‘adoptability’ metric in system quality dimension were identified as weak in SBI bank group.
- ‘Software modification’ (1.8 WAS) variable in ‘assurance’ metric, ‘communication with supplier’ (3.27 WAS) variable in ‘empathy’ metric and ‘rapport with supplier’
(3.27 WAS) variable in empathy metric of service quality in SBI bank group were found weak in SBI bank group.

➢ ‘System modification and redesign’ (2.53 WAS) variable in ‘appropriate’ metric in system use dimension were found weak in SBI bank group.

➢ ‘Participation in system development/implementation’ (1.65 WAS) variable in ‘training’ metric, ‘IS software increase the quality of work’ (2.83 WAS) variable in ‘quality of work’ metric and ‘needed support provided by IS specialist’ (3.37 WAS) variable in ‘training’ metric were found weak in user satisfaction in SBI bank group.

5.2.1b Findings of Nationalized bank group

➢ Among the total respondents 40 per cent of the respondents were clerical staffs who contribute to the major percentage of the nationalized bank group. Among them 26.4 per cent of them were accounted ‘some extent satisfied’ level opinion about information system efficiency they used.

➢ Based on designation of the respondents and opinion about the efficiency of IS significantly differs in Nationalized bank group.

➢ Among the total respondents 40 per cent of the respondents were 40-50 age group and 38.3 per cent of the respondents were above 50 years age group. Major group of respondents were belongs to 40 and above age group. According to the age group opinion about the efficiency of IS significantly differs in nationalized bank group. The generation gaps exist among the respondents.
In the total respondents 60 per cent of the internal users of Nationalized bank group were trained in bank itself, among the respondents the difference of opinion exist about the IS efficiency.

The majority respondents of the nationalized bank groups’ socio-economic profile were designation wise clerks, education wise graduates, gender wise male, age wise above 40 age group, computer literacy wise trained in bank itself and computer skill wise having operating skill.

Using garret ranking technique the respondents of nationalized bank group ranked the reasons for selecting the nationalized banks group, the ‘Economic status’ as first and ‘Job satisfaction’ as second, which shows the respondents perception of association with nationalized bank group.

The information quality, system quality, service quality and user satisfaction dimensions’ variables Cronbach’s alpha coefficient values were above 0.92, system use dimensions’ variables Cronbach’s alpha coefficient values were above 0.85 which shows all the dimensions and their variables were having good estimate of internal consistency and indicate the D & M model construct is highly reliable to the IS efficiency in nationalized bank group.

Net benefits help to express the performance of the organization. Identifying the factors influencing the net benefits help the banks to design their competitive strategy. The factor analysis shows the major influencing factors and their order of preference are internal efficiency, competitive advantage, value added service to retain customer and IS software quality.

Multiple regression and inter correlation for nationalized bank group proves that net
benefits is significantly correlated with the information quality, system quality, service quality, system use and user satisfaction dimension.

- The respondents perceive the impact of information quality, service quality and software quality on net benefits was higher where system quality and system use impact on net benefits was lower in nationalized bank group.

- Friedman ranking of the service quality of IS of suppliers of nationalized bank group reveals the variables ‘system struck are immediately ratified’ variable with the mean score of 3.56, the variable ‘system problems are correctly identified and rectified’ variable with the mean score of 3.74 were found weak.

- Weighted average score analysis for individual nationalized banks related to IS efficiency dimension were listed. Weighted average score of information quality dimension in Vijaya Bank (1.0 WAS), Alagabad Bank (1.0 WAS), Bank of India (2.3 WAS), Syndicate Bank (2.5 WAS), Corporation Bank (2.6 WAS), Bank of Baroda (2.9 WAS), Canara Bank (3.0 WAS), Oriental Bank of Commerce(3.0 WAS), Dena Bank (3.1 WAS), United Bank of India (3.3 WAS), Punjab National Bank (3.4 WAS), Indian Bank (3.5 WAS) were found weak in the information quality dimension. These banks have to improve the information quality.

- The system quality dimension in Vijaya Bank (1.0 WAS), Syndicate Bank (1.0 WAS), Alagabad Bank(2.0 WAS), Bank of India(2.2 WAS), UCO Bank(2.7 WAS), Canara Bank (2.8 WAS), Dena Bank (2.8 WAS), Oriental Bank of Commerce (2.8 WAS), Bank of Baroda (2.9 WAS),Corporation Bank (3.1 WAS) Indian Bank(3.4 WAS) and United Bank of India(3.4 WAS)were found weak.

- The service quality dimensions in Alagabad Bank (1.0 WAS), Vijaya Bank (1.6
WAS), Syndicate Bank (2.5 WAS) Bank of India (2.6 WAS), UCO Bank (2.6 WAS), Punjab National Bank (2.8 WAS), Canara Bank (2.9 WAS), Corporation Bank (3.0 WAS), Oriental Bank of Commerce (3.1 WAS), Bank of Baroda (3.2 WAS) were found weak.

- The system use dimensions in Alagabad Bank (1.0 WAS), Bank of India (1.7 WAS), Canara Bank (1.9 WAS), Vijaya Bank (1.9 WAS), Union Bank of India (2.0 WAS), Syndicate Bank (2.5 WAS), Dena Bank (2.7 WAS), Punjab National Bank (2.7 WAS), Corporation Bank (2.8 WAS), UCO Bank (2.8 WAS), Oriental Bank of Commerce (2.8 WAS), and Bank of Baroda (3.0 WAS) were found weak in nationalized bank group.

- The user satisfaction dimension, Syndicate Bank (1.3 WAS), Vijaya Bank (1.6 WAS), Alagabad Bank (1.0 WAS), Vijaya Bank (1.6 WAS), Bank of India (2.0 WAS), Canara Bank (2.0 WAS), Dena Bank (2.3 WAS), Punjab National Bank (2.4 WAS) UCO Bank (2.6 WAS), Union Bank of India (2.8 WAS), Oriental Bank of Commerce (3.0 WAS) and Bank of Baroda (3.1 WAS).

- ‘Reports supply needed information’ (3.09 WAS) variable in ‘relevance’ metric and ‘Highly reliable information’ (3.74 WAS) variables in ‘security’ metric in information quality dimensions were found weak in nationalized bank group.

- ‘IS is designed as required by user’ (3.69 WAS) variable in ‘usability’ metric and ‘IS reduce interaction time’ (3.78 WAS) in ‘response time’ metric in system quality dimension were identified as weak in nationalized bank group.

- ‘System struck immediately rectified’ (3.56 WAS) variable in ‘responsiveness’ metric and ‘System problems are correctly identified and rectified’ (3.63 WAS) variable in
‘responsiveness’ metric of service quality in nationalized bank group were found weak.

- ‘Due to convenience in using IS’ (2.26 WAS) variable in ‘quality’ metric and ‘modification & redesign of IS’ (2.88 WAS) variable in ‘appropriateness’ metric in system use dimension were found weak in nationalized bank group.
- ‘Participation in system development/implementation’ (2.12 WAS) variable in ‘training’ metric, ‘IS increase the quality of work’ (3.09 WAS) variable in ‘quality of work’ metric and ‘training provided to user’ (3.52 WAS) variable in ‘control of work’ metric were found weak in user satisfaction in nationalized bank group.

### 5.2.2 Findings of Private Bank Group

- The assistant managers/deputy managers contribute the 31.3 percentage of the total respondents and equally 31.3 per cent of the total respondents were officers. These two category of the respondents have considerable impact on IS efficiency in private bank group.
- According to the designation of the respondents and the opinion on the efficiency of IS significantly differs in private bank group.
- Among the total respondents 75.3 per cent of the respondents were below 30 years age group, which shows majority of the respondents were youngsters in private bank group. Based on the age group opinion about the efficiency of IS significantly differs in private bank group.
- In the total respondents 34.7 per cent of the internal users of private bank group have done certificate course in private bank group, which shows respondents own initiative
in improving their skill. Literacy level of the respondents, impact the difference of opinion on the IS efficiency.

- The majority respondents of the private bank groups’ socio-economic profile were designation wise assistant managers/deputy managers and officers, education wise post graduates, gender wise female, age wise below 30 age group, computer literacy wise done certificate course and computer skill wise having operating skill. This is the socio-economic background of the major respondents in private bank group.

- Using Garrett ranking technique the respondents of nationalized bank group ranked the reasons for selecting the nationalized banks group, the ‘Self esteem’ as first and ‘Self interest’ as second, which shows the respondents were more ‘self driven and career oriented’ in private bank group.

- The information quality, system quality, service quality and net benefits dimensions’ variables Cronbach’s alpha coefficient values were above 0.92, system use and user satisfaction dimensions’ variables Cronbach’s alpha coefficient values were above 0.84 which shows all the dimensions and their variables were having good estimate of internal consistency and indicate the D & M model construct is highly reliable to the IS efficiency in private bank group.

- Net benefits help to express the performance of the organization. Identifying the factors influencing the net benefits help the banks to design their competitive strategy. The factor analysis shows the major influencing factors and their order of preference are critical success factor, customer service, internal efficiency and software quality.

- Multiple regression and inter correlation for nationalized bank group proves that net benefits is significantly correlated with the information quality, system quality,
service quality, system use and user satisfaction dimension.

- The respondents perceive the impact of information quality, service quality and system use on net benefits was higher where system quality and user satisfaction impact on net benefits was lower in private bank group.

- Friedman ranking of the service quality of IS of suppliers of nationalized bank group reveals the variables ‘satisfied with the service provided’ variable with the mean score of 3.62 was found weak.

- Weighted average score analysis for individual private bank group related to IS efficiency dimension were listed. Weighted average score of information quality dimension in City Union Bank (2.4 WAS), South Indian Bank (2.4 WAS), Karur Vysia Bank (2.5 WAS), ICICI Bank Ltd (2.6 WAS), HDFC Bank (2.7 WAS), Federal Bank (3.0 WAS), IndusInd Bank Ltd (3.0 WAS), Karnataka Bank (3.0 WAS), IDBI Bank Ltd (3.1 WAS), Vysya Bank (3.2 WAS), Catholic Syrian Bank (3.3 WAS), Lakshmi Vilas Bank (3.4 WAS), were found weak in the information quality dimension in private bank group.

- The system quality dimension in City Union Bank (2.1 WAS), IDBI Bank Ltd (2.3 WAS), Karur Vysia Bank (2.3 WAS), HDFC Bank Ltd (2.4 WAS), ICICI Bank Ltd (2.42 WAS), Lakshmi Vilas Bank (2.6 WAS), South Indian Bank (2.6 WAS), Federal Bank (2.8 WAS), IndusInd Bank Ltd (2.8 WAS), Dhanalakshmi Bank (2.9), Vysya Bank (2.9) and Karnataka Bank (3.0) were found weak in private bank group.

- The service quality dimensions in City Union Bank (2.4 WAS), HDFC Bank Ltd (2.4 WAS), ICICI Bank Ltd (2.4 WAS), South Indian Bank (2.4 WAS), Karur Vysia Bank
(2.6 WAS), Karnataka Bank (3.0 WAS) Lakshmi Vilas Bank (3.0 WAS), and Tamilnadu Mercantile Bank (3.0 WAS) were found weak in private bank group.

- The system use dimensions in ICICI Bank Ltd (1.8 WAS), Axis Bank Ltd (1.9 WAS), City union Bank (2.0 WAS), South Indian Bank (2.1 WAS), Lakshmi Vilas Bank (2.4 WAS), Catholic Syrian Bank (2.5 WAS), Dhanalakshmi Bank (2.5 WAS), IDBI Bank Ltd (2.7 WAS) and HDFC Bank Ltd (3.2 WAS) were found weak in private bank group.

- The user satisfaction dimension, ICICI Bank Ltd (1.6 WAS), City Union Bank (1.7 WAS), Dhanalakshmi Bank (2.1 WAS), Axis Bank Ltd (2.4 WAS), Lakshmi Vilas Bank (2.4 WAS), HDFC Bank Ltd (2.7 WAS), IDBI Bank Ltd (2.7 WAS), Catholic Syrian Bank (3.0 WAS), Karnataka Bank (3.1 WAS), Indusind Bank Ltd (3.2 WAS), South Indian Bank (3.2 WAS) and Vysya Bank (3.2 WAS) were found weak in private bank group.

- ‘It is easy to understand’ (3.83 WAS) variable in ‘presentation’ metric in information quality dimensions were found weak in private bank group.

- ‘It is compatible with existing system’ (3.3 WAS) variable in ‘availability’ metric, ‘integration of IS well achieved’ (3.31 WAS) variable in ‘availability’ metric, ‘IS is designed as required by user’ (3.64 WAS) variable in ‘usability’ metric, ‘it easily integrates with other system’ (3.67 WAS) variable in ‘adoptability’ metric, ‘comparatively cost effective’ (3.67 WAS) variable in ‘availability’ metric, ‘quality and maintainability of program code is good’ (3.68 WAS) variable in ‘availability’ metric, ‘IS helps in decreasing the waiting time’ (3.69 WAS) variable in ‘response
time’ metric and ‘IS is speedy in response’ (3.69 WAS) variable in ‘response time’ metric in system quality dimension identified as weak in private bank group.

- ‘Needed software modification done’ (1.05 WAS) variable in ‘assurance’ metric, ‘communication with IS supplier is good’ (3.15 WAS) variable in ‘empathy’ metric and ‘satisfied with the service provided’ (3.61 WAS) variable in ‘assurance’ metric of service quality in private bank group were found weak.

- ‘Modification & redesign of IS’ (3.09 WAS) variable in ‘appropriateness’ metric and ‘serve the indentured purpose’ (3.76 WAS) in ‘appropriate’ metric in system use dimension were found weak in private bank group.

- ‘Participation in system development/implementation’ (2.12 WAS) variable in ‘training’ metric, ‘IS software increase the quality of work’ (3.12 WAS) variable in ‘quality of work’ metric and ‘needed support provided by IS specialist’ (3.60 WAS) variable in ‘training’ metric were found weak in user satisfaction in private bank group.

### 5.3 SUGGESTIONS

#### 5.3.1 Creating Employee Satisfaction

Employees play a major role at the delivery point of banking service. At the clerical and assistant/deputy manager’s category the satisfaction level differentiation must be removed, to enhance the productivity and quality of service which in turn develop the organization efficiency. Skill development programme should be initiated after careful study of employee needs. Assessing the varying training needs of employee helps to built skills and to meet the competitive situation.
5.3.2 Increasing the level of IS utilization

Discussion and mentoring sessions can be conducted to identify the problem of system as a whole. These sessions can be programmed according to nature of the job. Optimum utilization of IS software can be ensured when human resource and technology resource are integrated and interlinked properly.

5.3.3 Educational and Motivation Program

Regular educational program regarding latest development and future system developments and motivational sessions may increase the efficiency of the IS utilization.

5.3.4 Strengthen the Customer Base

The customer is king for all business, particularly for banking, the customer creates the opportunity for the banking sector to serve. The customer base can be strengthened by the IS. As the information technology develops day by day, the banks can offer more facilities in operating banking accounts. Aware of competitive banks IS strategy and introducing it to the customer, prevent from switching over to other bank.

5.3.6 Routine IS Development

Regular updating of IS may enhance the performance of the system. IS may make the internal operations stronger and competitive advantage over the rivals. The banks need to equip themselves with latest IS technology development to enjoy the sustainable competitive advantage.
5.3.7 Rapport between IS Suppliers and Bankers

The SBI bank group maintain a better rapport with the IS service providers. This spirit of co-operation trend must be prolonged. The service provider is mediator between the technology and banker. Continuous existences of empathy ensure and safeguard the interest of them.

5.3.8 Improvement needed in the metrics of D and M model

In the changing dynamics of the competitive environment no sector is left out without change. The changing dynamics reflected in the key factor of the organizational efficiency as suggested by the authors of the D and M model need change in the metrics can ensure an accurate measure of efficiency of the information system.

5.3.9 User Friendliness

While designing the software user friendliness can be given even better importance. High adoptability leads to increase in usage that motivates the user to increase productivity.

5.3.10 Awareness about the International Standards

International standards of banking service and information systems service must be frequently observed for modification of current policy of the bank. Steady process of inducting international standards in banks safeguard the future of banking.
5.3.11 Strengthen the weak dimension/metrics/variables

Individual banks score of six dimensions differ from each other. The lower level score indicate poor performance of dimension. For each dimension the metrics/variables need to be developed, must be tracked and improved.

5.4 CONCLUSION

IS service is backbone of financial institutions like banks. There is a need felt by the banker to assess the information system quality. There are as many models as the concepts. DeLone and McLean model use information concept referred by various researchers. The study has proved the reliability of DeLone and McLean model in measuring the efficiency of information system with reference to public and private sector banks. The other sector of organizations can use this model with relevant changes in the metrics.

The IS factors enhance the performance, with reference to public and private banks, were internal efficiency, competitive advantage, value added service of IS to retain customer, IS software quality and critical success factors. Internal efficiency is the capability of IS to handle its operations efficiently. The banking sector should strengthen its internal qualities to serve the customers. Competitive advantage is the strength of the institutions against its rivals. Since heavy competition exist in the market the IS should be competitive enough against its rivals. They should be proactive in IS service than reactive. Value added service of IS need to be included and innovated to satisfy the needs of the customers. It helps them in retaining existing customers. IS software quality should be improved by updating the software and introducing new applications.
Critical success factors are the key areas of organization efficiency used to formulate the competitive strategy. Thus intervening factor of net benefit identified can be used to design a competitive strategy.

The study insist on better integration of IS and employees of banks to strengthen the service. Knowing the standard of IS is important for organization performance. Assessing the D and M Model standard in assessing efficiency of information systems in banks grouping the factors is the motive which drives this research. Thus the research contributes a better model to measure IS efficiency and metrics of net benefit for the public and private sector bank scenario which exist in Coimbatore.

This helps in understanding the reliability of the model and the factors of assessment for future research work.

5.5 **SCOPE OF FUTURE STUDY**

Accessing the efficiency of IS is not a destiny to reach but it is a process. That itself is the scope of future study. The dynamics of future competitive environment and its scope can be incorporated to enrich the study. The future can be conducted with the needed modification in the metrics of six dimension of D and M model with the view to international standards of efficiency.

Comparative analysis of public and private banks with foreign banks can be done to view the different frontier of the study. The metrics used in the study were qualitative in nature, quantitative metrics like financial data can be included for further strengthening the scope of the study.