FINDINGS,

SUGGESTIONS AND

CONCLUSIONS

(Chapter 7)
7.1. **Findings:**

For simplicity the findings of the present study is segregated as - (i) information system audit and control in public banks; (ii) role efficacy of ICAI Professionals (i.e. CA) in information system auditing and control of banking sector; (iii) availability and use of tools & techniques for information system audit and control; (iv) information system audit course; and (v) acquisition status of DISA in India.

7.1.1 **Information System Audit and Control in Public Banks:**

The following are the results derived from the study (questionnaire from Bank Managers / Officers and Chartered Accountants) related to the information system audit and control of the public banks: -

(i) From the study we came to know that the information system audit of the branches of public banks in India is conducted through the Chartered Accountants. More than ninety five percent of public bank Managers / Officers confirmed the same.

(ii) Study reflects that it is necessary to possess the qualification of DISA (Diploma in Information System Audit – post qualification course on Information System Audit) or any equivalent information system audit course to conduct the information system audit of public banks in India. More than eighty one percent of public bank Managers / Officers confirmed that DISA or equivalent course is compulsory for the Chartered Accountants in order to conduct the information system audit of their bank’s branch.

(iii) Overall ninety five percent Chartered Accountants (on the basis of following discussed ten issues) revealed that information systems auditing of a bank’s branch requires to provide the feedback/suggestions/shortcomings while
conducting information system auditing of a public bank in India. The finding on each issue separately are mentioned in next page:

1. More than ninety eight percent Chartered Accountants pointed that information system audit of a public bank's branch requires to provide the feedback/suggestions/shortcomings related to Physical and Environmental Issue (such as upkeep and maintenance of personal computers, arrangement and placement of peripherals like (printers, hubs, UPS, Router, Modem, etc), Maintenance of Batteries, AMC, etc).

2. Hundred percent Chartered Accountants emphasized that information system audit of a public bank's branch requires to provide the feedback/suggestions/shortcomings related to Operational Functions (such as access to computers / terminals, printouts of recommended documents, logout procedure followed, scanning and attachment of signature of a/c holders, etc).

3. More than ninety six percent Chartered Accountants revealed that information system audit of a public bank's branch requires to provide the feedback/suggestions/shortcomings related to the Critical Services (such as loading of external data through CD, working of network printer, online scanning of signature, working of servers, etc).

4. More than ninety five percent Chartered Accountants expressed that information system audit of a public bank's branch requires to provide the feedback/suggestions/shortcomings related to Administrative Activities (such as Manager's approval for access of computer by vendor, staff accompanied with the vendor or not while monitoring his activity, unique user id or not, procedure of adding a new user, permission for deletion of password, procedure adopted when hardware taken away by any vendor, awareness of the branch officials regarding information system security policy of bank, etc).
5. Approximately ninety three percent Chartered Accountants stated that information system audit of a public bank’s branch requires to provide the feedback/suggestions/shortcomings related to Wide Area Network Connectivity (such as continuous connectivity or not, service given by the vendors, awareness of the branch officials of the connectivity from router/hubs, etc).

6. More than ninety seven percent Chartered Accountants pointed that information system audit of a public bank’s branch requires to provide the feedback/suggestions/shortcomings related to User in the System (such as membership of users, roles of users correct or not, periodical changes in password, password confidentiality, etc).

7. Approximately ninety three percent Chartered Accountants said that information system audit of a public bank’s branch requires to provide the feedback/suggestions/shortcomings related to External Software and Anti Virus (such as external software if any approved by the bank or not, loading of anti virus, regular virus scan or not, checking of virus while receiving content or data from outside, etc).

8. More than eighty nine percent Chartered Accountants revealed that information system audit of a public bank’s branch requires to provide the feedback/suggestions/shortcomings related to Internet and E-mail (such as availability of Internet connectivity in the branch, No. of PCs on Internet, sanction for Internet or not, Internet connected PCs are not on the branch LAN, utilization of E-mail facility, frequency of the response of the E-mail (daily or not), records of e-mail sent/received maintained by the branch or not, etc).

9. More than ninety five percent Chartered Accountants stated that information system audit of a public bank’s branch requires to provide the feedback/suggestions/shortcomings related to System Effectiveness and Efficiency (such as whether information system i.e. computer system has improved the customer service or not, whether the system provides the
required reports, whether the system is user-friendly, whether users in the branch are satisfied with the performance of the system, whether the system resources are being used optimum by the branch, etc).

10. More than ninety one percent Chartered Accountants expressed that information system audit of a public bank’s branch requires to provide the feedback/suggestions/shortcomings related to ATM / Debit Card Maintenance and ATM room maintenance.

7.1.2 Role Efficacy of ICAI Professionals (i.e. Chartered Accountants): -

The two findings which are valuable to identify the role efficacy of ICAI Professionals (i.e. CA) in information system auditing and control of banking sector is indicated in the aforesaid section. According to those - “audit of the branches of public banks in India is conducted through the Chartered Accountants and more than ninety five percent of public bank Managers / Officers confirmed the same”; and “more than eighty one percent of public bank Managers / Officers confirmed that DISA or equivalent course is compulsory for the Chartered Accountants in order to conduct the information system audit of their bank’s branch”. The following are the other results obtained from the study related to role efficacy of ICAI Professionals (i.e. CA) in information system auditing and control of banking sector through the query from the public bank Managers / Officers: -

(i) It is observed from the study that if Chartered Accountants will not possess the DISA or equivalent information system auditing course then their performance of system auditing will decline. As per the census more than eighty six percent Manager / Officer of the public banks validate the same.

(ii) From the study it is derived that feedback/suggestions/shortcomings provided by the Chartered Accountants after information system auditing are fruitful to bank, which facilitate the bank members to optimize the use of information system resources and therefore improving the efficiency of branch to cater its customers. More than ninety eight percent Manager / Officer of the public banks attest the same.
(iii) It is found that role of Chartered Accountant is vital related to the information system auditing of the public bank and more than eighty nine percent Manager / Officer of the public banks confirm the same.

(iv) From the survey it is achieved that in future Chartered Accountant with DISA or equivalent information system audit course will be necessary to conduct the information system audit of public bank. More than ninety percent Manager / Officer of the public banks certify the same.

Further, as examined that during the information system auditing of a public bank’s branch, a Chartered Accountant requires to submit the findings / suggestions / shortcomings on several issues (findings on the ten issues communicated in the previous section). Overall ninety five percent Chartered Accountants verify the same, which also leads to the justification for the effectiveness of the ICAI Professionals i.e. Chartered Accountants for the information system auditing of public banks in India.

7.1.3 **Availability and Use of Tools & Techniques:** -

The following are the results attained from the study (questionnaire from Chartered Accountants and literature search) related to the availability and use of tools & techniques for information system audit and control: -

(i) From the study of the literature it is detected that there are number of software tools and techniques available which may assist the information system auditor in the task of information system auditing and control. These tools and techniques are having the different software packages which include generalized audit software, industry-specific audit software, specialized audit software etc. Moreover number of high-level languages are available and being utilized in the preparation of modules for information system audit and control job. Some of the software tools are available to check the database (for example, Structured Query Language – to submit the different queries in database management system and obtain the information accordingly) and validate the system for data integrity as well as system effectiveness. Some of
them may be used for preparation of reports in different kind of formats; further some tools may be used to prepare flowcharts, data flow diagrams, etc.

(ii) As per the query placed to Chartered Accountants, more than ninety four percent responded that without knowledge of information systems as well as available tools and techniques for computer system auditing, a Chartered Accountant will not able to justify the information system audit and control work successfully.

(iii) Most of the Chartered Accountants confirmed that generally, they refer the guidelines and procedures issued through the Institute of Chartered Accountants of India (ICAI). However, more than fifty three percent Chartered Accountants are aware of the “IS Standards, Guidelines, Procedures for Auditing and Control Professionals”, prepared and issued through Information Systems Audit and Control Association (ISACA).

(iv) From the census of Chartered Accountants related to adequate awareness regarding the availability and use of Computer assisted audit techniques (CAATs), more than sixty five percent Chartered Accountants confirmed the same. On the contrary, more than thirty four percent Chartered Accountants pointed that they are not having adequate awareness regarding the availability and use of Computer assisted audit techniques (CAATs).

(v) It is obtained from the survey that more than seventy five percent Chartered Accountants have not used any application software which supports the auditing of information systems and control. However, most of the Chartered Accountants (out of approximately 25 percent) who used the application software for information system auditing revealed that they used Microsoft Excel, or their own designed module using Microsoft Excel, Tally for the information system audit task.

(vi) Lastly, more than eighty seven percent Chartered Accountants expressed that in India the development and availability of audit software (i.e. application software to support information system audit) is not sufficient.
7.1.4 **Information System Audit Course:**

In previous sections we already discussed the result obtained from the questionnaire survey that Information system auditing of a public bank’s branch is conducted through the Chartered Accountants and it was agreed by more than ninety five percent of the Bank Managers / Officers. Further, more than eighty one percent Bank Manager / Officers in the census declared that it is compulsory to possess DISA or equivalent information system audit course for conducting information system audit of a public bank. Furthermore, the opinion received from the Chartered Accountants through one of the query of questionnaire that without knowledge of information systems as well as tools and techniques for computer system auditing, a Chartered Accountant will not able to justify the information system auditing work successfully. More than eighty one percent Chartered Accountant in the survey assured the same.

Moreover the following are the other results achieved from the study (questionnaire survey from Chartered Accountants) related to the information system audit course: -

(i) The opinion poll highlights that it is necessary to identify the information system auditor for the purpose of information system audit and control from the group of auditing professionals. More than eighty percent of the Chartered Accountants opined the same.

(ii) More than seventy four percent Chartered Accountant also felt that information system auditing course is necessary to perform the audit of information systems.

(iii) More than seventy three percent Chartered Accountants also confirmed that qualification of DISA or equivalent information system audit course is compulsory for conducting the information system audit of computerized branch of a public bank.

(iv) It is observed that almost hundred percent Chartered Accountants are aware about the information system audit and control course and more than ninety nine percent of the Chartered Accountants certified the same through their response in the questionnaire.
From the questionnaire it is concluded that more than twenty four percent Chartered Accountants already passed the DISA course conducted by ICAI. However more than sixty three percent Chartered Accountants out of those who did not pass the DISA course are planning to appear for passing the DISA course.

It is found from the questionnaires that not a single Chartered Accountant acquired any other qualification (excluding DISA) related to the information system audit and control. However, while analyzing the secondary data (i.e. member’s directory ICAI) it is observed that very few Chartered Accountants acquired other qualification such as CISA, CISM, etc related to information system audit and control.

7.1.5 Acquisition Status of DISA in India:

The following are the results evaluated from the study (ICAI member’s directory as on April 1, 2009) related to the acquisition status of DISA through the Chartered Accountants in India (includes 28 States of India and 06 Union Territories of India excluding Lakshadweep):

From the study of member’s directory it is found that the DISA acquisition status through the Chartered Accountants of the three Indian States (Arunachal Pradesh, Goa, & Mizoram) and the three Union Territories of India (Andaman & Nicobar, Dadra & Nagar Haveli, Daman & Diu) are Nil i.e. no Chartered Accountants of these States and Union Territories passed the information system audit course (i.e. DISA) conducted by ICAI.

The twenty five Indian states and three Union Territories of India including national capital territory are pointed in the table 7.1 in the next page having the columns of total DISA, total CA and calculated DISA percentage. The table is prepared for the simplicity in observation of DISA percentage through Chartered Accountants of different States as well as Union Territories. The table does not depict the remaining three States as well as Union Territories having no DISA. The acquisition percentage of DISA in different Indian States are: - Andhra Pradesh – 10.20%, Assam – 26.06%, Bihar – 12.28%,

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### TABLE 7.1

<table>
<thead>
<tr>
<th>S. No.</th>
<th>State &amp; Union Territory</th>
<th>Total DISA</th>
<th>Total CA</th>
<th>DISA PERCENTAGE</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>694</td>
<td>6807</td>
<td>10.20</td>
</tr>
<tr>
<td>2</td>
<td>Assam</td>
<td>153</td>
<td>587</td>
<td>26.06</td>
</tr>
<tr>
<td>3</td>
<td>Bihar</td>
<td>76</td>
<td>619</td>
<td>12.28</td>
</tr>
<tr>
<td>4</td>
<td>Chandigarh (Union Territory)</td>
<td>110</td>
<td>841</td>
<td>13.08</td>
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<td>5</td>
<td>Chhattisgarh</td>
<td>155</td>
<td>973</td>
<td>15.93</td>
</tr>
<tr>
<td>6</td>
<td>Delhi (National Capital Territory)</td>
<td>908</td>
<td>20429</td>
<td>4.44</td>
</tr>
<tr>
<td>7</td>
<td>Gujarat</td>
<td>42</td>
<td>8498</td>
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</tr>
<tr>
<td>8</td>
<td>Haryana</td>
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<td>5093</td>
<td>6.64</td>
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<td>Himanchal Pradesh</td>
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<td>264</td>
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<td>10</td>
<td>Jammu &amp; Kashmir</td>
<td>64</td>
<td>273</td>
<td>23.44</td>
</tr>
<tr>
<td>11</td>
<td>Jharkhand</td>
<td>182</td>
<td>1019</td>
<td>17.86</td>
</tr>
<tr>
<td>12</td>
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<td>Kerala</td>
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<td>Maharashtra</td>
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<td>Manipur</td>
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<td>8</td>
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<td>Meghalaya</td>
<td>1</td>
<td>21</td>
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</tr>
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<td>Nagaland</td>
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<td>9</td>
<td>44.44</td>
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<td>19</td>
<td>Orissa</td>
<td>296</td>
<td>1295</td>
<td>22.86</td>
</tr>
<tr>
<td>20</td>
<td>Pondicherry (Union Territory)</td>
<td>21</td>
<td>130</td>
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<td>21</td>
<td>Punjab</td>
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<td>22</td>
<td>Rajasthan</td>
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<td>6264</td>
<td>11.08</td>
</tr>
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<td>Sikkim</td>
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<td>14.29</td>
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<td>24</td>
<td>Tamil Nadu</td>
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<td>13910</td>
<td>8.47</td>
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<tr>
<td>25</td>
<td>Tripura</td>
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<td>14</td>
<td>7.14</td>
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<tr>
<td>26</td>
<td>Uttaranchal</td>
<td>92</td>
<td>577</td>
<td>15.94</td>
</tr>
<tr>
<td>27</td>
<td>Uttar Pradesh</td>
<td>1024</td>
<td>7335</td>
<td>13.96</td>
</tr>
<tr>
<td>28</td>
<td>West Bengal</td>
<td>954</td>
<td>12796</td>
<td>7.48</td>
</tr>
<tr>
<td></td>
<td><strong>Grand Total</strong></td>
<td><strong>8995</strong></td>
<td><strong>148907</strong></td>
<td><strong>6.04</strong></td>
</tr>
</tbody>
</table>
The overall percentage of DISA acquisition (i.e. all India basis) in India is 6.04. Approximately 9000 Chartered Accountants in India possess the DISA as on April 01, 2009. This is evaluated from the total number of 148907 Chartered Accountants out of the total 153600 Chartered Accountants in India as on April 01, 2009.

From the study it is derived that Maharashtra is having DISA acquisition percentage 0.19, which is lowest in India. However in India, maximum number of Chartered Accountants is in Maharashtra i.e. 43323. Further, the other State is Gujarat having the DISA acquisition percentage only 0.49%. However, the number of Chartered Accountants in Gujarat is 8498.

Further it is found that Nagaland is having DISA acquisition percentage 44.44, which is highest in India. However, in Nagaland the number of Chartered Accountants is only 09, which is very low. Further, the other State after Nagaland is Assam with 26.06 DISA acquisition percentage and 587 is the number of Chartered Accountants in the Assam.

DISA acquisition percentage of Uttar Pradesh is 13.96 and the number of Chartered Accountants analyzed for the State is 7335. The DISA acquisition percentage of Uttar Pradesh is more than twice as compare to all India DISA acquisition percentage. Further, Varanasi is having quite convincing DISA acquisition status as its DISA acquisition percentage is 22.65 which is commendable as compare to the DISA acquisition percentage of Uttar Pradesh and overall India. Further, the total number of 309 Chartered Accountants is in Varanasi out of 7335 Chartered Accountants of Uttar Pradesh as on April 01, 2009.
7.2 **Test of Hypotheses:**

**Hypothesis 1:** There is significant system for computer based information system auditing and control in banks.

**Result:**
- Hypothesis May Be Accepted.

The findings clearly indicate that bank seeks suggestions / findings / shortcomings from the Chartered Accountants over the different issues related with computer based information system practices in their branch. Some of the issues pointed in the findings are: Physical and Environmental Issue, Operational Functions, Critical Services, Administrative Activities, Wide Area Network Connectivity, User in the System, External Software and Anti Virus, Internet and E-mail, System Effectiveness and Efficiency, ATM / Debit Card Maintenance. Overall more than ninety five percent Chartered Accountants revealed that they need to provide feedback/suggestion/shortcoming on such issues while conducting information system audit of a public bank in India.

Further, it is also derived from the study that generally banks are hiring the Chartered Accountants with qualification of DISA for the information system audit of their branch. More than ninety five percent Bank Managers / Officers confirmed that audit of information systems of their bank’s branches are conducted through Chartered Accountants as well as more than eighty one percent of the Bank Managers / Officers indicated that qualification of DISA or equivalent course is compulsory for the Chartered Accountants in order to perform the information system audit of a public bank in India. Furthermore, more than seventy three percent Chartered Accountants also confirmed that qualification of DISA or equivalent information system audit course is compulsory for conducting the information system audit of a computerized branch of a public bank.

Therefore, keeping in view “that (i) there are several issues related to information systems on which bank seeks feedback and suggestions from the Chartered
Accountants while information system audit of its branch, as well as (ii) compulsion of information system audit course i.e. DISA or equivalent for the Chartered Accountants in order to perform the audit of a public bank’s branch”, it is crystal clear that public banks in India are having significant system for computer based information system auditing and control. Hence, the hypothesis may be accepted.

**Hypothesis 2: -**
There is significant role of ICAI professionals i.e. Chartered Accountants in computer based information system auditing and control of banking sector.

**Result: -**
Hypothesis May Be Accepted.

From the study it is derived that feedback / suggestions provided to bank by the Chartered Accountants after information system audit are fruitful to bank and more than ninety eight percent Managers / Officers of the public bank attest the same. Further, approximately ninety percent Managers / Officers of bank confirmed that role of Chartered Accountant is vital related to the information system audit of public bank as well as Chartered Accountant with DISA will be necessary in future also to conduct the information system audit and control function of the public banks. Furthermore, more than eighty six percent Managers / Officers indicated that performance of Chartered Accountant in system auditing will decline if Chartered Accountant not possess the DISA or equivalent IS audit qualification. Moreover, overall ninety five percent Chartered Accountants verified that they require to handover the feedback/suggestions/shortcomings on several issues related with information system control and audit during the auditing of a public bank’s branch.

Therefore, keeping in view “the declaration of huge number of Managers / Officers of the public bank related to (i) feedback & suggestions provided by Chartered Accountants are fruitful to bank while performing the information system audit of bank’s branch and (ii) the role of Chartered Accountants is vital for information system audit of bank as well as (iii) Chartered Accountants with DISA or equivalent IS audit qualification will be needed in future also for conducting the information system audit of a public bank”, it is confirmed that there is significant role of ICAI
professionals i.e. Chartered Accountants in computer based information system auditing and control of banking sector. Hence, the hypothesis may be accepted.

**Hypothesis 3:**
There is significant need for the ICAI professionals i.e. Chartered Accountants to pursue the information system auditing course in order to perform the computer based information system audit & control.

**Result:**
Hypothesis May Be Accepted.

From the study it is observed that qualification of DISA or equivalent course to perform the information system audit of a public bank’s branch is compulsory for the Chartered Accountants and it is confirmed by more than eighty one percent public bank Managers / Officers as well as more than seventy three percent Chartered Accountants also verify the same. Further, more than ninety percent Chartered Accountants responded that without knowledge of information systems as well as available tools and techniques for computer system auditing, a Chartered Accountant will not be able to justify the information system audit work successfully and more than seventy four percent of them felt that information system audit course is necessary to perform the audit of information systems.

Furthermore, from the study it is concluded that more than twenty four percent Chartered Accountants already passed the DISA course and more than sixty three percent Chartered Accountants out of those who did not pass the DISA course are planning to appear for passing the DISA course. Moreover, from the secondary data it is obtained that even though all over India DISA pass percentage is only 6.04; some of the States are having DISA pass percentage more than 20.

Therefore, keeping in view “(i) the today’s role of ICT; as well as (ii) response of more than ninety percent Chartered Accountants that without knowledge of tools & techniques for computer system auditing, a Chartered Accountant will not be able to justify the information system audit work successfully; and also (iii) large number of Bank Managers / Officers & Chartered Accountants assertion regarding the
compulsion of DISA or equivalent IS audit course for public bank audit; and the (iv)
acquisition of DISA as well as planning to acquire DISA through Chartered
Accountants”, it is attested that there is significant need for the ICAI professionals i.e.
Chartered Accountants to pursue the information system auditing course in order to
perform the computer based information system audit & control. Hence, the
hypothesis may be accepted.

7.3. Suggestions:
Depicted underneath the suggestions which are derived from the present study made
through the questionnaire survey as well as literature review related to - information
system audit and control in public banks; role of Chartered Accountants as well as
ISA course for them; and DISA acquisition Status, etc.

(i) As the IS auditor handles a great deal of responsibility within an organization.
To develop controls that reduce the company’s threat of exposure, IS auditors
must understand the objectives of the audit, which is to conduct thorough,
accurate, pertinent, and complete reviews that yield effective
recommendations to senior management. To ensure that the audit and the
auditor are meeting these goals, the audit management must provide
evaluation regularly. Therefore, it is suggested that bank management (audit
division) must make sure that every audit is reviewed and that its findings are
clearly communicated to the auditor.

(ii) As auditors either internal or external can add tremendous value to an
organization by providing independent assurance related with the control,
security, etc of the information systems that these are working as intended.
Therefore, the report (i.e. feedback /suggestion /shortcomings) submitted by
the information system auditor must be analyzed and implemented. The
shortcomings indicated through auditor should be tested and appropriate
control or security may be adopted as suggested through the information
system audit.

(iii) It is suggested to bank management (audit division) to have the report from
the auditors who are hired /assigned the job of information system audit
regarding the use of computer assisted audit techniques (i.e. some audit software, packages, utility software, high level language, etc). Which will indicate that whether information system auditors are just completing the information system audit by checking the input to the system and output form the system or they are performing adequate tests through the use of computer assisted audit tools and techniques.

(iv) As per the findings it is derived that most of the public banks in India are offering the job of information system audit to Chartered Accountants having qualification DISA or equivalent information system audit course, which is a very healthy practice. And further it is suggested to continue the same practice as well as try to enlist those firms for information system audit, which are having Chartered Accountants with DISA or equivalent course, additionally with adequate experience of information system audit in relation to the use of computer assisted audit tools efficiently.

(v) It is suggested to ICAI professionals (i.e. Chartered Accountants of India) to learn fast and use extensively the computer assisted audit tools available in India and other countries for the information system audit and control. As from the findings it is observed that more than seventy five percent Chartered Accountants not used audit software or other tools and approximately fifty percent are not aware properly regarding the computer assisted audit tools and techniques available for information system auditing.

(vi) Further, it is suggested to Chartered Accountants that they may use the global electronic infrastructure for example internet, etc to find out the different audit tools, standards / procedures / guidelines of ICAI and other countries organizations / institutions related with information system audit and control and make themselves aware and upgraded. From the findings it is derived that most of the Chartered Accountants are not aware with guidelines of other countries as well as available tools related to information system audit and control.
(vii) As the acquisition percentage of DISA in India is only 6.04 percent and this is because of the very poor percentages of DISA acquisition in some of the Indian States such as – Maharashtra 0.19 percent (however number of CA is quite large i.e. 43323) & Gujarat 0.49 percent (number of CA 8498). These two States are having approximately one third CA of India. Therefore, it is the need of the present scenario that Chartered Accountants should acquire DISA or equivalent information system audit qualification (such as CISA, CISM, etc) on priority basis.

(viii) Keeping in view the velocity of change in information and communication technology is phenomenal, the Chartered Accountants are suggested to make a habit of learn, unlearn and relearn fast i.e. they learn the tools, techniques, standards, procedures, etc. related with information and communication technology, unlearn those which are being outdated and relearn the upcoming technologies.

(ix) Those Chartered Accountants who are quite comfortable with computer assisted audit tools and techniques may try to develop additional tools (audit software / utility software, etc.) which may helpful in audit and control of information systems through collaboration with software professionals or even independently.

(x) The Committee on Information Technology of ICAI may propose to separate the Chartered Accountants for information system audit by making compulsory the post qualification course on information system audit (i.e. DISA) or equivalent for information system audit of any organization in India. Which increase the DISA acquisition percentage in India as well as of those States where Chartered Accountants are not serious for information system audit course such as Maharashtra and Gujarat.

(xi) The ICAI may take the initiative for development of computer assisted audit tools in India through collaboration with other organizations which may help in the development of audit software as well as financial and other support. As
most of the CA reveal during survey that development and availability of auditing tools and techniques in India are not sufficient.

(xii) It is suggested that ICAI may increase the frequency and places for training, workshop and conferences for the development of Chartered Accountants in order to enable them for the use of computer assisted audit tools. As during the census it is observed that approximately seventy five percent CA have not used application software for information system auditing.

(xiii) Keeping in view the demand of information system audit in medium and large size organizations, it will be fruitful in future to divide the Chartered Accountants in two categories one with basic knowledge of information system audit and other with advanced knowledge of information system audit. To cater the segregation, it is suggested that ICAI may add one more group of information system audit in their core curriculum and hence those who passes the entire group will become CA with basic knowledge of information system audit. Moreover, for advanced level of information system audit & control knowledge the current post qualification course (i.e. DISA) may be restructured with consultation of experts, so that those CA in future who qualify the course will have extensive knowledge not only for applying the computer assisted audit tools and techniques but for planning and development of their own customized tools with the help of existing facilities.

(xiv) To maintain the equity and enhance the standards of higher education in India as compare with global scenario, it is suggested that Universities in India may coin courses related with information system audit and control, which may include the areas related to application as well as management control of computer systems, security of systems, legal framework, and many more.

(xv) Lastly, keeping in view the deployment of information and communication technology in every sphere of work, it is not beneficial to always be dependent on CA for information system use, control, management and other related activities. Therefore, it is worthwhile that in higher education courses such as bachelor and master degrees of Commerce, Finance and Management the
subjects related to information technology management, control and audit may be enlisted.

7.4. Conclusions:

Where there are computer systems and information generated by this technology to support decision making, there will be a need to assess the reliability, validity, and internal controls of such systems. There will be a need to secure them. Thus, information assurances (i.e. audit, control, and security) will become a more important part of all audits. Internal and external auditors can add tremendous value to an organization by providing independent assurance that controls are working as intended.

It is necessary to integrate computers into the audit process from project initiation to the final reporting stage. Full automation will enables auditors to make more efficient use of all available resources and enhance the credibility of the audit performed. Effective use of computer technology can empower auditors to conduct audits in today’s highly automated environments.

Through review of literatures the detail discussions are made in previous chapters on the issues such as what are the needs and objectives of control and audit of information systems; nature of controls & dealing with complexity, audit risks as well as procedures including the overview of steps in audit; management and application control frame work; and computer assisted audit techniques.

Further, census from Chartered Accountants as well as Bank Managers / Officers are carried for the judgment of objectives of the study such as role efficacy of Chartered Accountants in information system audit and control; system of information system audit and control in public banks of India; availability of computer assisted audit tools and techniques; and the requirement of pursuing information system audit course through the Chartered Accountants. These stated objectives are achieved and are comprehensively specified in the aforesaid findings section.

Furthermore, the study is made on the secondary data (i.e. Directory of Chartered Accountants as on April 01, 2009) which evaluated the trend of acquiring information
system audit qualification (i.e. DISA conducted by ICAI) through the Chartered Accountants in India. The percentage of DISA acquired through the Chartered Accountants of India is 6.04 that is, approximately 9000 thousands Chartered Accountants of India possess the DISA as on April 01, 2009. The DISA acquisition percentage of India is quite less due to the State of Maharashtra which is having DISA acquisition percentage only 0.19% however total number of Chartered Accountants in Maharashtra are 43323 and other State is Gujarat which is having DISA acquisition percentage only 0.49% however total number of Chartered Accountants in Gujarat are 8498. These two States are having around one third of the total Chartered Accountants of India and hence are playing vital role in decreasing the overall percentage of DISA acquisition in India. Moreover, DISA acquisition percentage of Uttar Pradesh is 13.96 and the number of Chartered Accountants analyzed for the State is 7335. The DISA acquisition percentage of Uttar Pradesh is more than twice as compare to all India DISA acquisition percentage. And Varanasi is having quite convincing DISA acquisition status as its DISA acquisition percentage is 22.65 which is commendable as compare to the DISA acquisition percentage of Uttar Pradesh and overall India.

It is critically needed through the Chartered Accountants to study the tools and techniques of information systems audit in order to support their clients for the technological implementation, error findings and changes as and when required. Because in today's brutally competitive environment in order to survive, thrive and beat the competition business organizations are making computer and communication technology an alley and harnessing its full potential. Therefore, in order to become good information system auditor the more number of Chartered Accountants of India should study the information system audit course and in the process try to acquire the DISA. This will enhance the percentage of Chartered Accountants having DISA in India and further facilitate the organizations to seek and depute the CA with DISA for information system audit for better control and security of information system processes. On contrary, if Chartered Accountants will not study the information system audit course their ability to audit the information system will decline and which may puts the business organizations in trouble due to lack of information system audit knowledge of the Chartered Accountants.

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