MINISTRY OF DEFENCE

CHAPTER: III

Bharat Electronics Limited

Production Planning and Material Management modules of SAP (Enterprise Resource Planning package)

Highlights

The projected savings that SAP was to achieve did not materialise with regard to inventory carrying cost, cost of goods sold and reduction in sundry debtors in number of days of sales.

(Para 3.7.1.1 (iii))

Users resorted to manual process due to lack of proper training and non-utilisation of all available provisions. Audit Information System module was not implemented.

(Para 3.7.1.2)

The IT policy including information security policy was still under preparation.

(Para 3.7.2.1 & 3.7.2.2)

Log files of access control device were not maintained and not monitored. The password policy and data classification were yet to be prepared.

(Para 3.7.2.3 & 3.7.2.4)

Offsite storage of backup data was not established.

(Para 3.7.2.7)

Materials valued Rs.1.02 crore although sold were shown under finished goods.

(Para 3.7.3 (iv) (b))

Production orders were not closed and shown under Work-In-Progress (WIP) even after completion of sales and manual entries had to be resorted to reduce WIP by Rs.2.36 crore.

(Para 3.7.3 (iv) (c))

Advance and letter of credit payments amounting to Rs.1.40 crore not adjusted on receipt of material resulting in over statement of both current assets and current liabilities.

(Para 3.7.3 (v))

The value of WIP exceeded the net realisable value by Rs.1.44 crore without adhering to the Company's accounting policy on inventory valuation resulting in overstatement of WIP.

(Para 3.7.4)

Abnormal variation in valuation of inventory item valued Rs.0.61 lakh was taken as Rs.7.01 crore and due to wrong entry of exchange rate and material valued Rs.15000 was shown as Rs.14 lakh.

(Para 3.7.6 (iv) and 3.7.6 (v))

3.1 Introduction

Bharat Electronics Limited (Company) was incorporated in April 1954 as a fully owned Government of India Undertaking under the Ministry of Defence. At present the Company has nine production units, two Central Research Laboratories, six Regional Offices and two overseas offices located at New York and Singapore.

Major customers of the Company are the three Defence Services, Para military forces, All India Radio, Doordarshan, Bharat Sanchar Nigam Limited, Indian Space Research Organisation *etc.* The Company's turnover during the year 2007-08 was Rs.4102.54 crore of which the Defence Sales contributed 83 *per cent.*

3.2 Organisation

The Information Systems (IS) Division in Corporate Office is headed by a General Manager, who is assisted by an Additional General Manager. There are functional groups handling various modules of SAP, systems administration group and network administration group.

The details of the process of computerisation in the Company are as follows:

(i) **Integrated Financial Accounting System:** The material accounting (COBOL based) was started in Information System (then EDP) Division during 1965 and subsequently was replaced (1988) with Oracle database based Integrated Financial Accounting System (IFAS). The IFAS stock and value were the basis for financial accounting.

(ii) **Manufacturing Resource Planning:** During 1996-98, Oracle based Manufacturing Resource Planning (MRP II) was implemented in all the divisions for generating Purchase Requisitions, shortages, *etc.* and the material accounting transactions of IFAS were transferred to central server.

(iii) **Enterprise Resource Planning:** Based on the recommendations of Tata Consultancy Services (TCS) for a Centralised Common Integrated System, and also to support current and future business requirements, the Company entered into an agreement (December 2004) with SAP INDIA SYSTEMS at a fee of Rs.3.87 crore for Enterprise Resource Planning (ERP) software and with WIPRO for implementation of ERP at a total contract price of Rs.5.65 crore.

The system is based on 3-tier architecture (R/3). Application is centrally run in servers at Information System–Corporate Office {IS (CO)}. Clients are connected to the server through Local Area Network for Bangalore Complex and through Wide Area Network for units outside Bangalore.

SAP (ERP) was introduced in October 2006 in Bangalore complex and subsequently in other units. In July 2008, it was implemented in the Corporate Office. Hence, Audit conducted a general review of the acquisition, implementation and utilisation of ERP system with a specific thrust on the transactions for the years 2006-07 and 2007-08.

3.3 Scope of audit

Out of ten modules[*], two modules i.e. production planning and materials management modules, which are of critical importance for the functioning of the Company were reviewed. Being the major unit of the Company, analysis of data was restricted to Bangalore complex. The scope of audit was to examine the controls built in for system acquisition, operations and maintenance.

3.4 Audit methodology

Audit conducted the review in the following manner:

(i) Reviewed the acquisition of Information System facilities and system's development;

(ii) Extraction and analysis of data using Computer Assisted Audit Techniques;

(iii) Collection of data through issue of questionnaire, audit requisitions, audit enquiries and replies received;

(iv) Discussion/interaction with the officers of Information System/User Departments;

(v) Test check of sample transactions; and

(vi) Follow up of Audit observations of earlier Accounts Audits/reviews and other relevant information relating to the ERP System.

3.5 Audit objective

The objective was to review the performance of SAP and seek assurance on the following:

(i) The system documentation was adequate to ensure efficient and continuous operation of the system.

(ii) Planning, acquisition and implementation to assess the effective achievement of ERP objectives.

(iii) General and application controls available in the system with reference to production planning and material management modules.

(iv) Data was complete and reliable in terms of its integrity.

(v) Business rules of the Company were correctly mapped.

(vi) Information System controls in the system provided reasonable assurances for the intended objectives.

The earlier system of IFAS and MRP II systems was reviewed by the C&AG of India and observations were brought out in the Audit Report No.4 of 2005. In response to many observations the Management had stated that these discrepancies would be taken care of in the new SAP system. The same were followed up during this audit.

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[*] ***Product Lifecycle Management, Sales and Distribution, Production Planning, Materials Management, Finance and Controlling, Quality Management, Project Systems, Human Resources (excluding payrolls), Plant Maintenance Customer Support***

3.6 Audit criteria

The following criteria were adopted for review of the SAP modules:

(i) Parameters prescribed in the SAP system, procedures and practices adopted;

(ii) Control and security parameters as per best practices; and

(iii) Corporate Rules, Government guidelines, amendment parameters incorporated in the SAP modules.

3.7 Audit findings

3.7.1 System acquisition, development and implementation

3.7.1.1 Implementation issues

(i) The Company had various milestones in the implementation of the project. There were delays ranging from 9 months to 2 years in achieving the individual milestone targets as well as overall completion of project.

The Ministry accepted (March 2009), the delay and attributed the complex nature of business requirements of the Company and the large volume of legacy data to be migrated to SAP as the reasons for the delay.

The reply is not acceptable since the Company during the feasibility study of the project should have considered the complexity of its business requirements. Thus the improper project planning had led to delay in implementation of various milestones.

(ii) As per the agreement, WIPRO was entitled for pro-rata payment on completion of various milestones. In December 2007 despite non completion of implementations at Ghaziabad, Kotdwara and Panchkula, the Company released Rs.32 lakh to WIPRO against bank guarantee. As the agreement did not provide for payment in advance, release of amount before completion of milestone was not in order.

(iii) The Company appointed (December 2002) TCS to study and identify the gaps between the existing IT infrastructure and future business requirements. TCS in its report (May 2003) worked out an investment of Rs.37.50 crore with an estimated pay back period of about two years upon implementation of ERP system. TCS identified tangible benefits like reduction in inventory, cost of manufacturing and sundry debtors accruing to the Company. However, it was observed that there were no improvements in Company's performance after implementation of ERP in October 2006, as envisaged, e.g. the sundry debtors in number of days of sales had increased during 2007-08 and the savings projected for inventory carrying cost and cost of goods sold by the Company did not materialise. Reasons for non-accrual of anticipated benefits may be attributed to partial implementation of checks and controls, non-utilisation of system in follow up of bills and non-utilisation of automated process available in the system as has also been brought out in the succeeding paragraphs.

The Ministry stated (March 2009) that a number of benefits have accrued from implementation of SAP for monitoring of inventory and sundry debtors. It further stated that the implementation was yet to be completed and since only Bangalore

Complex has been on SAP for 18 months, the payback period would have to be reworked.

The reply is not acceptable as sundry debtors and inventory carrying cost were on increasing trend even two years after the implementation. Though the Company clarified that SAP increased the visibility of inventory across the Company, no reduction in cost of manufacturing and reduction in inventory was achieved. Thus, the intended benefit on implementing SAP was not achieved.

3.7.1.2 Utilisation of modules

(i) The Company initiated production activity based on customer orders. There after purchase process was initiated by raising purchase requisition by the planning department, followed by request for quotations, preparation of comparative statements and finally placement of orders by the purchase department. Even though this business process was mapped into the system, details of purchase requisitions already raised by the planning department were reentered in purchase department for initiating the purchase process. In addition, the subsequent process of request for quotations and comparative statements were also prepared manually. It was observed that it was not used by the users due to non familiarisation to the automated processes even after a lapse of one and half years (October 2006 to March 2008) indicating lack of adequate training. Thus, users resorting to manual process even after availability of automated processes resulted in data inconsistency and partial utilisation of the system and thereby increasing the risk of input errors.

The Ministry replied (March 2009) that the Purchase Requisitions entered by Planning Department were not required to be re-entered in the system for initiating purchase process. Ministry further stated that due to non availability of Supplier References information for non-standard parts, manual processes were resorted to and such data were being uploaded in SAP in a phased manner for utilising the same during purchase process.

Thus, the non completion of uploading entire data into the system even after two years resulted in users resorting to manual process.

(ii) It was observed that the Audit module (Audit Information System) was not activated, resulting in non-utilisation of the module that could have been used effectively as management information system as well as for internal control purposes. The Ministry stated (March 2009) that the implementation of Audit Information System in the upgraded version of SAP will be taken up separately.

3.7.2 General controls

General controls create the environment in which IS applications and related controls operate. If general controls are weak, reliability of controls associated with individual IS applications i.e. application controls get diminished. Following deficiencies in general controls were noticed:

3.7.2.1 The IT policy was under preparation even though the Company has had computerisation efforts for over 30 years.

3.7.2.2 IS security

The information security policy was under preparation.

3.7.2.3 Physical access controls

The physical access to the data centre was restricted through access control device and door lock. The access control system consists of reader to permit access based on employee identity card, magnetic lock and controller that record every entry. For easy access during working hours, the door lock was kept open. It was seen that the video camera was not commissioned. The log files of access control device were not maintained to monitor unauthorised access. Also no review of access authorisation was evaluated regularly to ensure the validity. Considering the confidentiality of data in the system relating to defence sector equipment, weakness in the physical access controls exposes the systems and data to unauthorised access.

The Ministry accepted (March 2009) the observations relating to IT Policy and IT Security Policy. The Ministry further stated that the video camera has been commissioned and the installation of an access control system for tracking of access to the system has been planned.

3.7.2.4 Logical access controls

(i) Provision was available in SAP to assign roles and authorisations to different users and to maintain log and audit trail. It was seen that the provision was not customised by the Company. The Ministry stated (March 2009) that provision and facilities in SAP to assign roles and authorisations to different users and maintenance of audit trail were now being used.

(ii) The password policy and data classification was to be prepared and documented. Though the password had to be changed regularly without repeating, the same could not be verified due to absence of data. Generic user names (group user names) were provided and review/monitoring of changing the password on employee leaving the Company was not being carried out. Hence, responsibility and accountability could not be fixed and it increased the risk of unauthorised access to data. The Ministry stated (March 2009) that the user ID system was being revised to take care of audit trails and proper accountability.

(iii) The automatic timeout of idle logons after 20 minutes was extended for the entire server on need basis wherein the transactions could not be completed with in 20 minutes. The list of changes to idle timeout was not stored in the system. However, it was seen that SAP had option where the transactions could continue unhindered even though the system went into time out. Thus, the extension of timeout increased the risk of unauthorised access to the system. The Ministry stated (March 2009) that such extensions were allowed only on specific request for a specific period only. The reply is not tenable as that the extension was being provided to the entire server, thereby enabling use by all other users connected to that server. Further, the reply was silent regarding the option in SAP to allow such transactions even during the timeout periods.

(iv) Though the systems connected to SAP and Internet were separated, in the absence of restrictions to upload files with provision to use external hardware (Pen drive, CD drive etc.), there was no safeguards against malicious programs infecting the SAP system. Though as a policy “on access scan” had been enabled in the anti virus software

which slows down the system processing, the users were permitted to change the settings, thereby circumventing the controls.

The Ministry in its reply (March 2009) stated that SAP servers at the Company are Unix based which were immune to viruses. The PCs used for accessing SAP system were only front end systems which can not push viruses to SAP servers.

Though the server was Unix based and protected from virus, the front end systems were window based with facility for use of external hardware and sharing of files. The systems connected to the network were thus not immune to virus. Hence, the circumventing of controls needs to be addressed centrally and the reply is not acceptable.

3.7.2.5 Environmental control

The data centre was located in the ground floor and with partial roofing that had seepage stains indicating seepages during rains. The risk of damage due to water to the server room and equipments in the room could not be ruled out. The Ministry stated (March 2009) that the seepages in communication room have been plugged (January 2009).

3.7.2.6 Network controls

(i) The Company did not have information on the information assets which could lead to situation where loss of any such assets remains untraced.

(ii) The connectivity outside Bangalore was established using router. Firewall and intrusion prevention systems were yet to be installed. Hence the system security was under the risk of unauthorised access. Though the connection was secured with encryption algorithm and leased lines, in view of the unused access points remaining open the risk of unauthorised connections to server causing intentional or unintentional damages to the data was still present.

The Ministry stated (March 2009) that the open ports would be disabled in a phased manner and Firewall and Intrusion Prevention System would also be installed.

3.7.2.7 Business continuity and disaster recovery

It was observed that the business continuity plan and disaster recovery plan were yet to be framed and documented. The alternate data centre was set up in Bangalore complex. The Company stated that in view of the data being updated at alternate site using transaction logs and backed up every day, off site storage of tapes were not necessary. The reply is not convincing as in the absence of offsite backup storage, the backup data is also exposed to similar natural risks as that of the original data. This risk is more pronounced in view of the strategic importance of the equipment manufactured for defence supplies.

The Ministry stated (March 2009) that it has been planned to shift the Disaster Recovery site to Chennai by mid 2009 pending which, the backup tapes were being kept eight kilometres away from the data centre in the corporate office.

3.7.3 System design/customisation

The following customisation deficiencies were noticed in audit.

(i) As per the accounting policy the inventory should be valued on weighted average rate. However, the system was configured to value the inventory at different rates

with reference to corresponding sale orders. This led to valuation of inventory against the Company's accounting policy. Test check of raw materials in one store of Bangalore complex revealed that a certain material was valued at different rates with a difference amounting to Rs.49 lakh.

(ii) Lack of relational integrity between the materials shown under work in progress (WIP) in material management module and the corresponding status of the material in the production planning module was noticed. System displayed the status of material of one division of Bangalore complex valuing Rs.72 lakh as on 31 March 2008 as raw material while the same items were accounted as work in progress. Also there was a difference of Rs.5.63 crore between the value of raw material in material management module and the value of raw material in the finance module in respect of the same division.

The Ministry stated (March 2009) that the store mentioned against the materials was the store from which it was issued for production order and further stated that the difference of Rs.5.63 crore was due to inter division transfer of material. The reply is not tenable since such misleading depiction of status of the materials could have been avoided by using the designated field to store the location of the material. The reply that the difference was due to internal transfer of material cannot be accepted; as all inter transfers in material management module should get automatically reflected in finance module.

(iii) Scrutiny of Purchase Order (PO) without value relating to inter divisional transfer revealed that the issue of materials by a division was made with value assigned to the material where as receipt of these materials in the receiving division was made without any value assigned to the material. Lack of relational integrity led to the risk of improper depiction of individual accounts of the divisions. The Ministry stated (March 2009) that the deficiency in the system has now been rectified.

(iv) Referential integrity

The Company initiates multiple production orders based on a sale order. In the absence of customer indent in case of spares, the production orders were processed based on work order or approval order. On completion of sale, all corresponding production orders should be closed automatically. The absence of referential integrity between sale order and production order which is essential to ensure integrity of data resulted in data inconsistency, incorrect valuation of raw material and manual intervention. This increases the risk of incorrect data being processed and accounted as illustrated below:-

(a) The value of the raw materials differed among account schedules, purchase price, store ledger and pricing entry. The Company stated that the variations were due to changes in duties, taxes and material value between dates of placement of order and accountal of material upon receipt. The Ministry endorsed (March 2009) the reply of the Company. The reply is not tenable since being an integrated system any changes in one module should have been reflected in other related modules.

(b) The status of material worth Rs.1.02 crore were shown as 'finished goods' as on 31 March 2008 even though the materials had been sold in March 2007.

(c) Test check of major completed sale orders revealed that out of six sale orders selected, against three sale orders the production orders were not closed (May 2008). Hence, these were still shown under WIP and manual entries were resorted to effect value reduction (Rs.2.36 crore) in WIP as at 31 March 2008. This issue was also discussed in the earlier Audit Report no.4 of 2005 of the C&AG of India.

The Ministry stated (March 2009) that necessary checks have been incorporated (July 2008) to close production orders before issue of material to finished goods and also to close the corresponding production orders before delivery of materials.

(d) Out of 3702 production orders reviewed, 177 were created without linking to any authorised orders. The Company while agreeing with the observation replied that now a check has been introduced so that production orders can not be created without account assignment. The Ministry endorsed (March 2009) the reply of the Company.

(v) The system was not designed to adjust the advance payment made immediately on receipt of material. This resulted in over lapping of accounting entries of both debiting and crediting inventory account and wrong depiction of accounting status of payment as advances. On test check in five POs it was observed that the advance payment of Rs.1.40 crore (by Letter of Credit or bank payment) were not treated as payment on receipt of material and also the items were taken to inventory without quality inspection and acceptance.

(vi) The advances paid upon placement of order, are to be proportionally adjusted against receipt of material in a staggered manner. However, the system was not designed accordingly and the entire advances alone could be adjusted. This led to overstatement of current assets and current liabilities bearing an impact on the financial accounts. On test check of four cases it was observed that advances and sundry creditors were overstated to the extent of Rs.1.09 crore and on being pointed out by Audit, the Company passed rectification entries to correct the unadjusted advances. The Ministry accepted (March 2009) the deficiency and attributed it to manual interventions during the adjustment of advance payments including L/C payments.

(vii) The business rule of the Company regarding sub-delegation of powers based on value for various activities (release of purchase/sale orders) was not mapped into the system. The automated work flow available in the system was also not yet activated. This had the risk of irregular release of POs. The Ministry stated (March 2009) that a system for release of POs as per delegation of powers was being configured.

3.7.4 Mapping of business rules

As per the accounting policy of the Company, the WIP should be valued at actual cost or net realisable value of the corresponding sale order to which the material costs are being booked, which ever is lower. However, it was observed that the net value of WIP exceeded the net realisable value amounting to Rs.1.44 crore. In reply the Company stated that during migration, WIP was uploaded linking it to one sale order even if it pertained to more than one sale order of the same project. The reply is not tenable since

it violates the accounting policy and valuation of WIP should be linked to the corresponding sale order under which the cost was being booked. The lack of control to restrict the quantity and value of material in WIP to the corresponding sale order resulted in overstatement of WIP.

The Ministry stated (March 2009) that the case projected was one off case that had occurred due to difficulty in migration of data from legacy system to SAP which had varying business logic. The reply is not tenable since while migrating the data, the Company failed to map the business rules in the system. The Company also did not incorporate appropriate control to restrict the quantity and value of material in WIP to corresponding sale order. Hence it could not be treated as one off case

3.7.5 Data migration

(i) On completion of migration, the uploading option should be closed as a security measure. However, it was observed that the initial upload account was operated during the year 2007-08 in 77 materials for transaction worth Rs.1.27 crore using general user authorisations. This indicates that the data was not complete and also exceptional transactions were transacted by the general users.

The Ministry accepted (March 2009) the correction of the migrated data in due course and attributed the cause for such mistakes to voluminous master data and multiple legacy systems that were in operation before SAP. The reply is not tenable as audit observed the uploading option was open to general user even after 'go live' for 18 months in Bangalore complex.

(ii) During migration, the defective material from the legacy system was taken into SAP as inventory. This was shown as normal material without flagging for defect, even though the option was available in the system. This led to improper projection of stock position which affects the further procurement process. The Ministry stated (March 2009) that this was an isolated case that had happened during the transition from legacy system to SAP.

(iii) During data migration, finished goods pertaining to more than one sale order were loaded into the SAP system against a single sale order. The system could not restrict total quantity of finished goods against the corresponding sale order quantity. Sample review of two finished goods which were compared with the sale order revealed that the quantity shown as balance in finished goods exceeded the total quantity against the corresponding sale order. The failure to design the system to maintain relational integrity, further led to wrong depiction of finished goods pertaining to a sale order. The Ministry accepted (March 2009) the observations and stated that such errors will not be encountered in the SAP system.

(iv) It was observed that due to incomplete data migration, the non-moving/slow moving stock report could not be generated from the system. Hence, the Company resorted to manual process which resulted in duplication of work. In response, the Ministry stated (March 2009) that the Company had developed (December 2008) a transaction code to generate a report of the non moving/slow moving stock from the system.

(v) During data migration, the data was not cleansed and finished goods were not reconciled between system stock and physical stock. The system continued to maintain such data which affected the further production process. In order to rectify the inconsistency, manual entries were passed during finalisation of accounts. The Ministry stated (March 2009) that this error due to data migration was corrected and now the sale order wise WIP is shown on a real time basis.

3.7.6 Input control and validation checks

Input control procedure is to be employed in the system to ensure that all data is received and recorded completely, accurately and without duplication. Validation checks ensure that the data entered into the system is valid. However, it was observed that due to absence of proper input control and validation checks, the data was incomplete and unreliable.

(i) There was no uniform pattern for coding of material built into the system and this resulted in inconsistent material code entered into the system, even though the coding pattern was incorporated into the system.

The Ministry stated (March 2009) that proper coding of material existed in the system and cases pointed out in audit related to some of the old project part numbers, which were not as per standard numbering system. The reply is not acceptable since the inconsistent pattern was being continued in the system and the Company had not corrected it as of March 2009.

(ii) On analysis of the details of 60950 materials from the material master revealed that all particulars were not filled in respect of 12395 materials due to absence of validation check and input control. The blanks in columns like profit centre, purchasing group *etc.,* affected the cost allocation.

(iii) It was observed that out of 21151 POs, 8263 POs were without any net value, 381 without material code, 7770 without vendor code and 41 without quantity. The Company stated that this exists in case of inter Company stock transfers. Even in such cases division code should be provided against vendor code and materials should be transferred with actual cost as division wise accounts were prepared. The non incorporation of the same affected allocation of cost and the accounts of the units.

The Ministry replied (March 2009) that action has been taken to book the transferred material at the cost of the sending plant and errors noticed would not occur in future.

(iv) The value of one material with description 'wire' had been wrongly captured as Rs.7.01 crore against the actual value of Rs.0.61 lakh. It was seen that there was no supervisory authorisation to ensure the correctness of input data at operational location. This led to over valuation of stock. Further, the system was not configured to restrict the value of the inventory to the procurement cost. The Ministry replied (March 2009) that the error has been rectified. It is however reiterated that necessary checks should be built in to the system to avoid such occurrences in future.

(v) On receipt of invoice for the imported materials, the exchange rate should be used from the exchange rate table stored in the system. However, it was noticed that

the system did not automatically adopt the rate and allowed manual entry. The lack of inbuilt validation check to link with the table and consequent manual intervention led to wrong valuation of a material at Rs.14 lakh *per* unit, against procurement cost of US$ 400 (Rs.15000 approx.).

The Ministry accepted (March 2009) manual intervention leading to error in valuation and stated that the same had since been rectified. Even though the said cases were rectified, no checks were employed in the system to avoid such occurrences in future.

(vi) The system was configured to allocate the labour cost to WIP whenever labour was booked. However, it was observed that the labour cost was not allocated to WIP as and when it was incurred. This had the risk of under valuation of WIP and also the labour cost being charged off as expenses, contrary to the accounting policy of the Company; and

(vii) The system was designed to block duplicate entries of vendors. However, inconsistency in pattern of data entry led to duplicate vendor codes, which led to risk of inconsistent order placements and payment tracking for the vendors.

The Ministry accepted the audit observation and stated (March 2009) that though the system has a manual search provision to avoid duplicate vendor codes, the system could not prevent duplicate vendor codes due to manual errors.

3.7.7 Non monitoring of service level agreement

The minimum service level of 99 *per cent* was to be provided for wide area network connectivity and penalty was stipulated for service below minimum. However, the payments were made without confirming the performance which had the risk of making extra contractual payment.

The Ministry stated (March 2009) that action is being initiated to monitor the performance before making payment.

3.8 Conclusion

The Company dealing in strategic defence service sector, decided to implement SAP as a state of art technology with the objective of having organised information online. Failure to design the required controls in the system, inappropriate customisation, lack of input controls and validation checks and inadequate controls during data migration resulted in non-utilisation of the SAP system to its full potential and the integrity and accuracy of the data could not be ensured. Consequently the Company still depended on the legacy system and resorted to manual interventions in the current system. Further, deficient physical access controls, logical access controls and network controls made the system vulnerable to unauthorised access to data. Inadequate use of the system coupled with the manual interventions and weak security controls exposed the system to manipulations, unauthorised use and led to the risk of unreliable data.

3.9 Recommendations

The Company should implement the following to optimise the benefits from implementing the SAP system:

* Formulate and implement Information system policy and Information security policy.

- Adopt business continuity and disaster recovery plan and establish the off site data center at the earliest.
- Establish procedure for periodic review of master and transaction data for integrity and reliability.
- Appropriate controls to be employed to depict correct value of inventory in the accounts.
- Strengthen validation checks and internal control procedures.
- Ensure that all automated features in the software are properly utilised to reap the benefit of SAP and manual interventions to be minimised.