

COMMANDANT CONCLAVE 12/2015

**ENTERPRISE RESOURCE MANAGEMENT PROPOSAL
FOR NAVY PRINTING UNIT**

By

Long Logistics Management Course 2 - 2015

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ABSTRACT

Sri Lanka navy has decided to commission a printing unit in order to fulfill printing solutions in house recently. The aim of this project is to minimize the printing expenses, thereby save the government funds and giving in-house training exclusively for officers and sailors for printing works which would help them once they retired from SLN. Also the project has been aimed to meet all SLN printing requirements on time without any short supply on time. The financial benefits of this project are yet to yield and annual printing expense has been recorded approximately Rs. 35 million according to the year 2013 expenses prior installation this printing machine. The cost saving by introduction of this machine was calculated as Rs. 14 million per annum based on the past records available. The necessity of introducing an Enterprise Resource Plan (ERP) for this project has identified considering the complexity of the process, thereby to optimize utilization of the printing machine.

The course participants of Long Logistics Management Course No 2- 2015 has carried out a comprehensive study on this matter in order to explore the opportunity to improve this unit as a corporate venture and introduce a suitable ERP solution .Further identified that this printing unit is an opportunity to meet the total printing solution in SLN and could be utilized the spare capacity to provide the services for outside parties as well.

CHAPTER I

INTRODUCTION

Background of the Study

1.1 Sri Lanka Navy (SLN) has spent Rs. 35 million annually for its printing requirement. The profit mark up applied by the service providers for these printing jobs is varying from 40% to 140% depend on the job, urgency, art work and technology etc. This phenomenon was stem to find alternative solutions in order to reduce the expenses for the printing jobs in Sri Lanka Navy and acquired a German made fully pledged Heidelberg Speed Master SM 74 two colour offset Printing machines in first quarter 2015 in order to fulfill the printing requirement in house.

Problem Statement

2. The machine in its full capacity can generate the output of 15000 papers per hour and it has the endurance to run 24/7. Eventhough the machine has its spare capacity SLN does not utilize its optimum capacity due to following reasons.

- a. Less number of jobs compared to the machine capacity
- b. Delays in material supply
- c. Absence of a proper annual work plan
- d. Unskilled labour force
- e. Delays in printing process
- f. Absence of a proper operational plan to execute the work load

Objective of the Study

3. The purpose of this study is to explore the opportunities to transform the existing printing unit as profitable, innovative, effective and efficient corporate venture with installation of a suitable Enterprise Resource Plan (ERP) solution in order to acquire market portion with greater value addition.

Limitation of the Study

4. The study was mainly constrained by the absence of required technical knowledge of the field. In addition the other constraints are as follows,

- a. Limited time duration for the study.
- b. Absence of opportunity to carry out a filed study.
- c. Since the research has carried out by internal party on an internal matter, possible biasness towards final decision cannot be ruled out.

CHAPTER II

AN OVERVIEW OF THE EXISTING PRINTING UNIT

5. Sri Lanka Navy has established a printing unit based on the proposal made by the Director General Training. The initial requirement has been raised on 18th June 2012 to purchase an offset printing machine with the intention of undertaking following printing requirements;

- a. Printing of training docketts
- b. Printing of passing out souvenirs
- c. Printing of greeting cards
- d. Printing of calendars
- e. Printing of invitation cards, menu cards, and all other requirements of SLN functions
- f. Printing of tender invitations
- g. printing of handouts related to advance training
- h. Printing of all types of NAV forms and other documents other than those compulsory to be printed at the Government Press.

6. The supplier M/S Heidelberg Druckmaschinen AG Germany selected after calling Limited International Bidding and the Departmental Procurement Committee has approved to purchase one Heidelberg Speed Master SM 74 two colour offset press (size 53 x74cm) at a total CIF cost of EURO 200,000.00 (Rs 45million) with following extra accessories;

- | | | |
|----|---|----|
| a. | Manual Film and plate punch table device | 01 |
| b. | Manual Plate and bending device, table device | 01 |
| c. | Register bar for film | 01 |
| d. | Register for plate making | 01 |
| e. | Adapter bar for plate making | 01 |
| f. | Sucker and blowers for porous stock | 01 |
| g. | Blankets Saphira Pro 200 day IMC | 02 |

- h. Ink fountain protective foils (12 pcs) 01
- j. Ink fountain foils (100 pcs) 01

7. The printing unit was established on 09th April 2015 at Walisara and undertakes following printing jobs at present (Except digital printing).

- a. Posters
- b. Bill books
- c. Invitation cards
- d. Letterheads
- e. Certificates
- f. Wall Calendars
- g. Desk calendars
- h. Pocket calendars
- j. All NAV forms

CHAPTER III
SWOT ANALYSIS

8. The existing system has its own strengths and weaknesses. The SWOT analysis guides to identify the organization's strengths and weaknesses, as well as opportunities and threats.

9. **Strengths**. Strength is the internal factor of the organization. Followings are the strengths which were identified during the study;

- a. It would lead to save money for SLN.
- b. Can utilize available man power.
- c. To be self sufficient.
- d. Time and resources can be saved .
- e. Internal printing requirement can be fulfilled at minimum time and changes can be done with the short notice.
- f. Cost effectiveness.

10. **Weaknesses**. Followings weaknesses are identified;

- a. Unavailability of a spare printing machine.
- b. Unavailability of the essential supportive machinery for the entire printing process
- c. There is no specific estimates for printing quantity.
- d. There is no adequate space for entire printing process.
- e. The probable difficulties to provide the service to outside customers due to restrictions in Government procurement process of SLN.
- f. Restriction for easy accessibility for outside customers.

11. **Opportunities.** Followings are the opportunities identified;

- a. Possibility to undertake outside customers requirements.
- b. Competitive advantages can be achieved through least cost.
- c. Opportunity to establish positive relationship with public.
- d. Possibility to develop new skilled workforce.

12. **Threats.** Threats include external factors beyond the organization controls that could place its strategy or the business itself at risk. The organization has no control over these, but it may benefit by having contingency plans to address them if they could occur. Followings are the threats which were identified;

- a. Products quality of other service providers in the market.
- b. Dependency of supportive service providers directly effect to the entire process.
- c. Difficulty of holding regular customers.
- d. Social responsibility and trustworthiness expected by the customers is given since responsibility of outcome to be very high.

13. According to the study, establishment of printing unit is a cost effective project in SLN. Because, it can save funds to SLN due in-house project and also can meet SLN requirement in effective and efficient manner. There is an opportunity to meet outside organizations' requirements during the idling period and can earn more profits. However, there may be some effects on external environment particularly from PESTEL (Political, Economical, Social, Technical, Environmental and Legal) aspects. SLN has to compete with outside service providers and has to maintain the least cost as well as quality products.

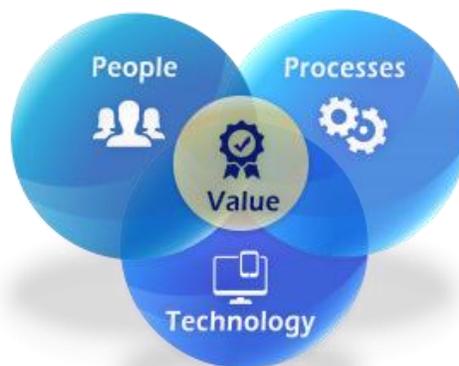
CHAPTER IV

IMPLEMENTATION OF AN ENTERPRISE RESOURCE PLAN (ERP)

14. The world is being changing rapidly with innovation of new technology day by day. People are using technology to ease their works immensely to ensure the effective utilization of limited resources and also saving time. The concept of ERP has evolved with technological improvements particularly in the field of information technology where it has helped to transfer the burden of manual functioning of activities to automated systems thus achieving a highest accuracy and consistency of the activities in organizations.

15. The traditional organizations are having hierarchical organizational structure, where it has several administration layers to function the processes in the organization. This structure has some inherent drawbacks to hinder the efficiency. The orders are coming from the top management and it communicate to the down the line in order to execute the tasks. Therefore there is a significant delay in activities where the lower level employees are waiting till receipt of orders. This is why the ERP is coming handy.

16. Whenever the organizations expanded and the processes get complicated and the owners are very eager to introduce automated systems in order to improve the efficiency in the processes in order to minimize the delays and maximize the profits.



ERP System

17. An Enterprise Resource planning system is a fully integrated business management system covering functional areas of Logistics, Production, Finance, Accounting and Human Resources. It organizes and integrates operation processes and information flows to make optimum use of 7 M, men, material, money, machine, market, method and management. Enterprise resource planning promises, one database, one application and one user interface for entire enterprise, while mutually exclusive systems ruled manufacturing, distribution, finance and sales.

Why Companies Undertake ERP

18. All organizations existing in the world today are running with competition than ever. Accordingly all the business organizations are seeking ERP solutions to sustain in the market. The business organizations are trying to make changes and add values to their products and processes thereby to retain their customers and maintain or extend their market share. In this context the ERP brings following advantages for the companies.

- a. **Integrate financial information.** CEO need to understand the company's overall performance; he may find many different versions of ground situation. ERP creates a single version of the truth which cannot be questioned because everyone is using the same system.
- b. **Integrate customer order information.** ERP systems could facilitate the customer to make the orders via system without physically visiting to the supplier. Having this information in one software system, companies can keep track of orders more easily, and coordinate manufacturing, inventory controlling and shipping to different locations simultaneously.
- c. **Standardize and speed up manufacturing processes.** Manufacturing companies which have merged with other companies often find multiple business units across the company make the same transaction / recording / report using different

methods and computer systems though they operate under one umbrella. ERP systems come with standard methods for automating some of the steps of a manufacturing process.

- d. **Reduce inventory.** ERP helps the manufacturing process flow more smoothly, and it improves visibility of the order fulfillment process inside the company. Also lead to reduce inventories of the materials used to produce finished goods (work-in-progress inventory), effective delivery plan to customers, minimizing finished goods inventory at the warehouses and shipping docks.
- e. **Standardize HR information.** Especially in companies with multiple business units, HR may not have a unified, simple method for tracking employees' time and communicating with them about benefits and services. ERP can fix that.

Factors to be Considered When Selecting an ERP Package

19. There is a distinct possibility that the organization will have to restructure some of your business processes to fit the ERP system. This can be cumbersome and seem it's working backwards and forcing ERP system to fit your current processes whilst questioning what's best for your business.. Before selecting a suitable ERP system with the assistance of consultant it is necessity to map company current order workflow, exterior, interior information flow and find out bottlenecks. Process assessment is the next stage. When both being completed, choice of ERP systems can be made, and the standard working procedures could it can be planned.

20. ERP implementation takes time. The process of integrating so many different data and communications functions under one system needs to be carried out in modular stages and tested along the way, with correcting issues prior to moving into other module. Disruption during implementation may occur though how deliberately you've mapped out the process. There may unanticipated issues at all times.

Standard Procedure of Implementation of an ERP System

21. Once the decision is taken to introduce an ERP solution, the next step would be the implementation. The type of implementation would vary depend on the existing process in the organization where some organizations are having manual processes while some are already being practicing some kind of ERP system. There are certain strategies are used to implement the ERPs.

- a. Big Bang strategy
- b. Phased Transition strategy
- c. Parallel Transition strategy

22. **Big Bang Transition Strategy.** The installation of ERP systems of all modules happens across the entire organization at once. The big bang approach promised to reduce the integration cost in the condition of thorough and careful execution. This method dominated early ERP implementations and it partially contributed to the higher rate of failure in ERP implementation. All the business functions performed in the inheritance system across the entire enterprise are concurrently transferred to the new legacy system during a period of one day or a weekend. But now a day's industries are wavering to use big bang approach as it consumes too many resources to support the go-live of the ERP system.

23. **Phased Transition Strategy.** The phased approach, implements one practical element at a time. Autonomous modules of ERP systems are installed in each unit, while integration of ERP modules is done at later stage of the project. This has been the most commonly used method of ERP implementation. Each business unit may have its own "instances" of ERP and database. Modular (phased) implementation reduces the risk of the installation, customization and operation of ERP systems by reducing the scope of the implementation.

24. **Parallel Transition Strategy.** The parallel approach keeps both the inheritance system and the new ERP system active concurrently for a certain period of time. The amount of time for which both the systems are in operation ranges from one day to several months and may be to years. Portions of the same functional business areas (including software) such as finance,

manufacturing, marketing etc. are operating at the same time for both the legacy and ERP systems. An advantage to the parallel strategy is that it has good improvement options in case something goes off beam. Because both the inheritance ERP system and the new ERP system are in function at the same time for a particular module, the industry's business processes will not be broken up if the new ERP system breakdowns.

25. The ERP coordinator must ensure to build the time factor into the enterprise's road map. Make sure that senior management should understand the commitment ERP will require. ERP implementation is not a by-the-way project. It is concluded that ERP implementation is a journey and not the final destination and hence an implementation strategy must be selected according to the needs of the particular industry and not just showing to the world. If all the plans of transition will go right along with specific business and business processes every one can see dramatic positive impacts on ROI (Return on Investment).

CHAPTER V

PROPOSED MODULE

26. The acquiring of SM 74- 2 colour offset printing machine by spending of more than 42 million is challenging decision. The Net Present Value (NPV) calculation shows (for 10 years) the viability of the project as indicated in table 1 below. (Figures are indicated below are millions.)

Year Desc.	0	1	2	3	4	5	6	7	8	9	10
Investment	(42)	-	-	-	-	-	-	-	-	-	-
Maintenance	-	(0.75)	(0.75)	(0.75)	(0.75)	(0.75)	(0.75)	(0.75)	(0.75)	(0.75)	(0.75)
Saving (W1)	-	14	14	14	14	14	14	14	14	14	14
Net Cash Flow	(42)	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25	13.25
DCF @ 6% (W2)	1	0.943	0.890	0.840	0.792	0.747	0.705	0.665	0.627	0.592	0.558
Present Value (PV)	(42)	12.49	11.79	11.13	10.49	9.90	9.34	8.81	8.31	7.84	7.39
Accumulated NPV	(42)	-29.51	-17.71	-6.58	3.91	13.81	23.15	31.96	40.27	48.11	55.51

Table 1: Net Present Value of the project

Note – W1- The value denotes cost saving by undertaking the printing job in-house per annum based on year 2013 demand.

W2 -The value of discount factor (DCF) indicates both cost of capital and inflation 6% and 0.1% (based on Central Bank report month of July 2015) respectively.

From 4th year onward fixed cost will recover by undertaking printing jobs in-house and gained the profit for the organization. From 8th year onward it is advisable to decide about further expansion of printing unit due to savings are more than 40 million based on NPV calculation.

27. After 10 years, estimated profit will be Rs. 55.51 million where it has recovered the initial investment of Rs. 42 million and would able to save additional Rs. 55 million where situation is considered as favorable. The most important factor is that above NPV calculation has made only by considering in-house jobs. Therefore project will earn much more high profit if it catches a portion in outside market.

28. It is observed that SLN is spending annually around 35 million to outsourcing in-house jobs. Followings are the important jobs to be undertaken with this machine.

- a. Printing of training docketts
- b. Passing out souvenirs
- c. Annual Diaries and Calendars
- d. Invitation cards, menu cards and all other printing requirements of special occasions
- e. Tender invitations
- f. Advance training documents requirements
- g. All type of NAV forms and documents other than which to be compulsory to print by Government printing unit.

29. SLN printing unit can undertake all above jobs with two third of cost saving when compare with outside suppliers (based on comparing quotations received from outside printers and SLN printing unit). It is revealed during the study that M/S Creative Lines Printers has quoted Rs. 375.00 as unit cost for printing of passing out souvenirs. But SLN printing unit carried out job at a unit cost of Rs. 151.00 inclusive of all overhead costs. Further, SLN has called quotations for printing of Navigational Record Book from outside suppliers and quoted Rs. 460,000.00 for the job. However SLN printing unit completed job by just spending Rs. 121,000.00.

30. Since the machine has requested for in-house use, SLN has not requested of some other supported essential machines which required operating in mass level. Although machine cost is Rs. 42 million, supplier agreed only one year warranty. Thereafter SLN has to come up with maintenance agreement with the supplier for any contingencies.

31. This is a two colour printer where need to run printing documents in two times to get true colours. However, in the outside organizations, there are latest machines with four colour where printing documents gets true colour at once. But the cost of same is very high.

32. Due to non availability of CTP machine for cutting of printing plates, SLN is outsourcing the requirement of printing plate at a unit cost of Rs 800.00. It is estimated approximately 2,000 sheets are required to cater in present jobs requirements. That means SLN annually spend Rs. 1.6 million for outsourcing printing plate. Otherwise we have to purchase CTP machine for above purpose which will be cost approximately Rs. 150 million. Therefore it is worth to continue with present practice.

33. By looking at the NPV analysis it is obvious that acquisition of SM 72 - 2 colour offset printing machines by spending Rs. 42 million is worthy decision. The most important thing is that how efficiently utilize said machine for SLN printing requirement and how to win outside market for effective utilization of spare capacity. It is not an easy thing for newcomer to capitalized considerable market share competes with well established printers in the market. For that we should have more powerful strategic plan to compete with competitors.

34. Followings organizations are some of forefront firms of the particular industry in the outside.

- a. Government Printers
- b. M/S Print care
- c. M/S Master Graphics
- d. M/S JDC Printers

35. ERP is the most applicable theory to improve the efficiency and effectiveness of printing unit. As per the theory, it is recommended to implement ERP module under “**Phase Transition Strategy**”. Before implement ERP module it is better to develop processes of printing unit in standard level. For that we can use Flow Chart Diagram in order to standardized process.

36. Proposed ERP solution as indicated in the process flow chart (Figure 1 in page No 16) has covered all major activities in SLN printing unit as revealed in the study. Therefore it is proposed to obtain Deputy Director Naval Information Technology assistance to develop an ERP package according to the proposed flow chart. Following are the processes which has identified in flow chart diagram,

- a. Inventory Management Module
- b. Marketing Management Module
- c. Production Management Module
- d. Finance Module
- e. Human Resource Management Module
- f. Waste Management Module

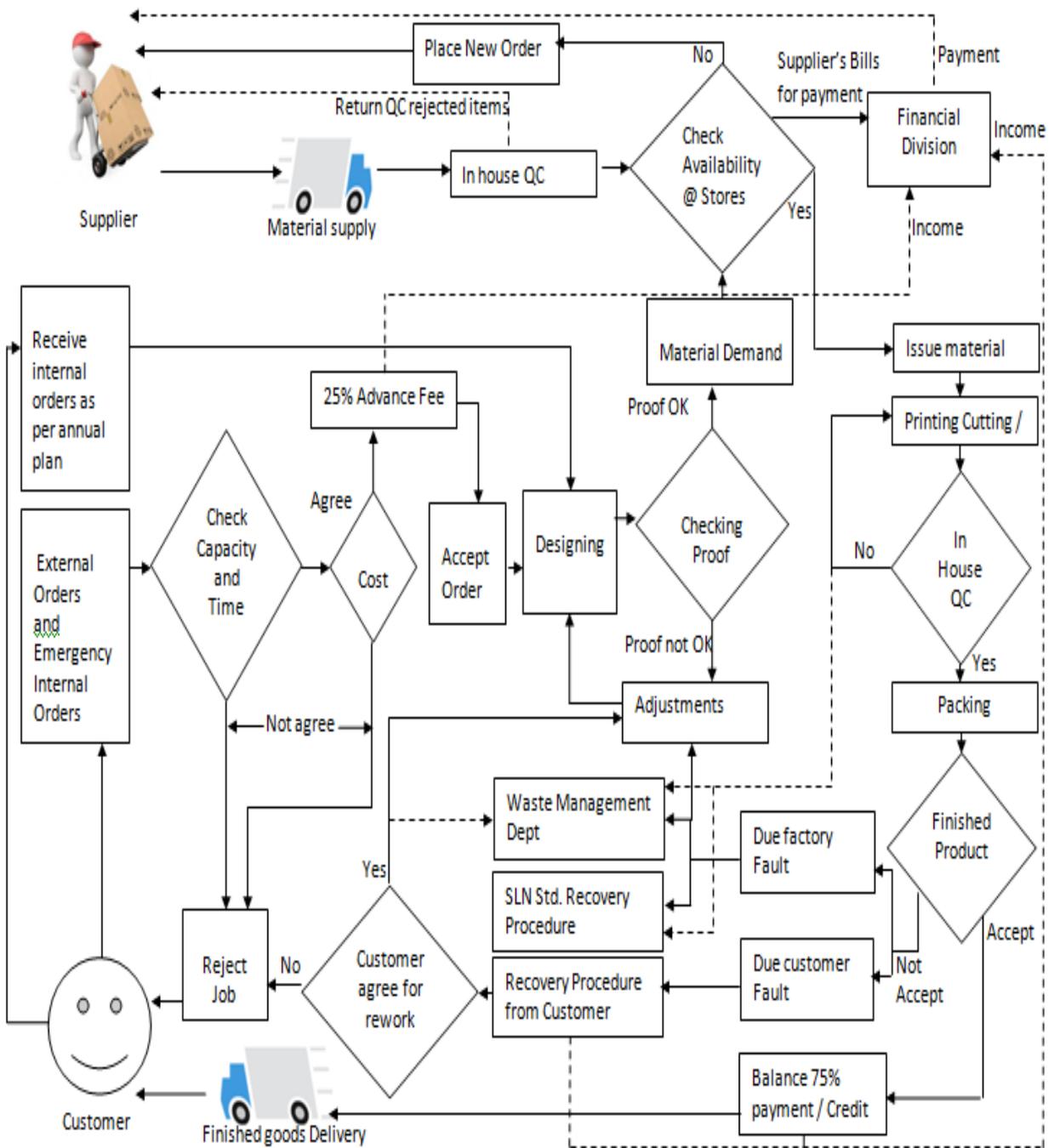


Figure 1: Proposed Master Flow Chart

Inventory Management Module

37. The SLN printing unit is intended to undertake all offset printing requirements of SLN and to undertake printing requirements of other public and private organizations based on the spare capacity available for such undertakings. One of the most important phases in the implementation of these programs is procurement or the acquisition of goods and services to achieve project objectives and results. In order to ensure timely supply of required raw materials in line with the annual production plan, following structure and procurement module is proposed.

- a. **Structure.** The Unit Procurement Officer will be responsible to the Printing Unit OIC for the procurement, storage and delivery of all raw material required for printing according to annual printing plan. The Unit Procurement Officer will be staffed with two stores assistant sailors.
- b. **Sources of Supply.** The main source of supply will be based on the annual rate contract basis. Bids for the selection of suppliers for raw material for next financial year will be invited from a pre-selected list of suppliers during the month of September of the current financial year and contracts should be finalized first week of December.

38. In order to ensure continuous production process one month stock of raw material should be maintained. Accordingly raw material requirement for the next month could be purchased and stored by 10th of the current month in line with the negotiated delivery period.

39. In order to meet any contingency arising due to any unforeseen circumstances a contingency fund worth of Rs 200,000.00 to be maintained with the Unit Procurement Officer.

40. **Quality Control.** Quality control of all stores receipt is to be carried out by the OIC of the printing within two days from the date receipt of items.

41. **Ledgerization.** All items passed by Quality Control Board are to be taken on charge in the relevant ledger based on the invoice received. All ledgerization actions must be completed within one day on completion of QCI on automated system.
42. **Settlement of Invoices.** On completion of ledgerization payments could be made to the suppliers within 07 days from the date of ledgerization.
43. **Maintenance of records.** The Unit Procurement Officer is to maintain accurate and updated records w.r.t. items on order, items held in stock, dues for suppliers for material delivered etc. through automated system.
44. The procurement department and raw material suppliers will be interfaced in the proposed ERP system where both parties will be able to correspond online through ERP interface.
45. The Unit Procurement Officer is responsible to maintain a healthy and strong relationship with all raw material suppliers in order to ensure a proper supplier relationship management.

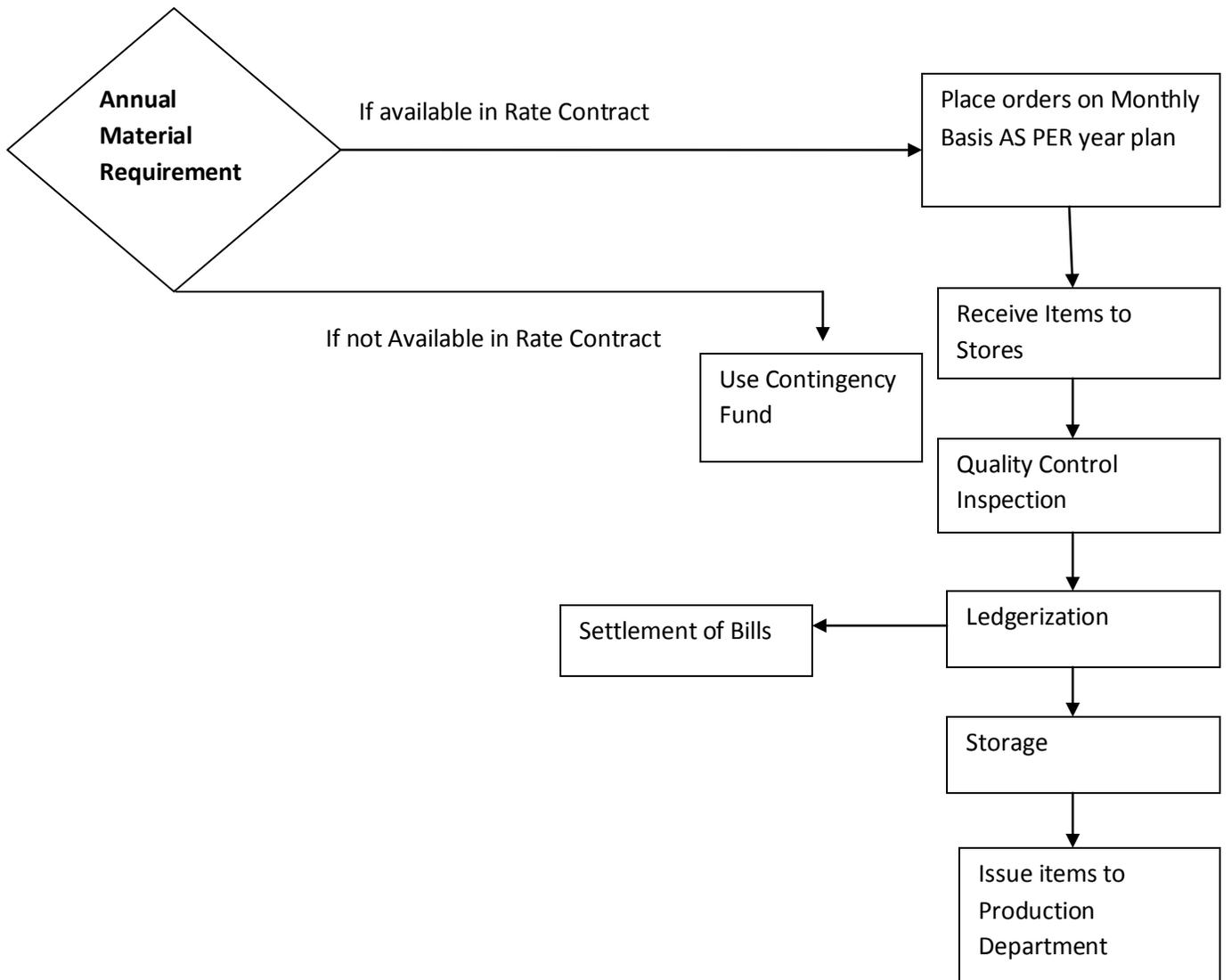


Figure 2: Proposed Inventory Module

Production Management Module

46. The printing requirement shall be initiated from SLN as well as from the external customers. The Printing Unit should be capable enough to undertake internal and external orders together. There should be proper mechanism to reach the end user's requirement in efficient and effective manner.

47. **Internal customer.** The Senior Staff Officer (Printing Unit) – SSO (PU) should plan the annual printing plan based on the printing requirements of all internal customers (all Director Generals, all Area Authorities, Commanding Officers and Officers In Charges). SSO (PU) may gather such information minimum 3 months prior to next year by way announcement through Navy General. A 5% profit markup to be served for internal printing jobs.

48. **External Customer.** External customer is any outside organization or person who is seeking service of SLN printing press. They are not like internal customer and always change with the environment. Therefore, it is very much difficult to retain them long time without satisfying their requirement on time, least cost and high quality product. Profit markup, 25% to be served for the printing jobs and the Staff Officer Procurement (Printing Unit) - SOP (PU) may provide discount maximum upto 10% for external customers with proper approval from SSO (PU). The external customer can initiate their order through following channels;

a. **Online Order.** The customers should be given the access to raise the requirements through online and SLN will accept the orders. Thereafter, forwarding of proof, obtaining confirmation and the payment should be done online through payment gateway of SLN printing unit website. Its main purpose is to capture the determined market share in the existing market.

b. **Walk in order.** The customer has to walk in to SLN Printing Unit in order to raise the requirement. The checking and confirmation of proof and payment should be done by visiting of the SLN premises.

c. **Direct Marketing Team.** Under this method we are promote our printing unit by using direct marketing team (civilians) to obtain jobs from reputed companies. They will visit companies and obtain printing jobs.

Printing Process

49. After obtaining the internal and external customers' requirements, there should be a method to process those requirements in efficient manner without prejudicing either party's interest. The internal customers' requirements initiate in a periodical manner. Therefore, it is easy to make the year plan to cater internal requirements.

50. It is necessary to pay special attention on the external customers' requirements when it operates on the objectives of corporate venture. Because, there are many printing organization such as M/s Aiteken Spence, M/s Acme Printing and M/s Print Care are smartly operating in the outside and they are having 20 to 30 years experience in the printing business. SLN Printing Unit has to work out the external customer's requirements during the idling time period prejudicing to the proposed production year plan.

51. Printing Unit has to get the final confirmation from the customer before final printing. At this stage, if it is the external customer order, it will obtain 25% advance payment for the order and should get the written confirmation for the final proof from the customer. The printing is the main task carrying out by the Printing unit. Therefore special attention to be paid on productivity (minimize the wastage), printing effectiveness and the quality of the raw material. Throughout the printing process the quality assurance should be maintained in the highest standard. The quality work of the printing is directly affected to create quality assurance at SLN Printing Unit in the market and it leads to retain the external customers within SLN (marketing through word of mouth).

52. There may be some printing defect occurred during printing process and it may be due to the operators' mistakes, mechanical defects or customer's negligence. Therefore, it has to be carefully studied and identify the responsible party. If the defects born due to the Printing Unit (operators' mistakes, mechanical defects), the relevant loss has to bear by the Printing Unit/

personnel. If it is due to customer negligence, the recovery of loss to be recovered from customer.

53. The post press process is starting after the completion of the printing of requirements either internal or external customer .That process is involving the cutting, binding, packing and delivering. The cutting and binding methods should be mentioned in the order and it has to be done as per the agreement (Size, Design, Front page, etc.). The packing is also to be undertaking according to the end users' request ensuring safety of product/safe handling. The external customers' requirement could be delivered/ issued after receiving the full payment or the payment terms agreed upon.

54. On completion of internal customers' order, the finished product could be delivered to transit stores for onward dispatch. When it comes to the delivery of external customers' requirements, it should be done as per the agreement among by the both parties (SLN and Customer).

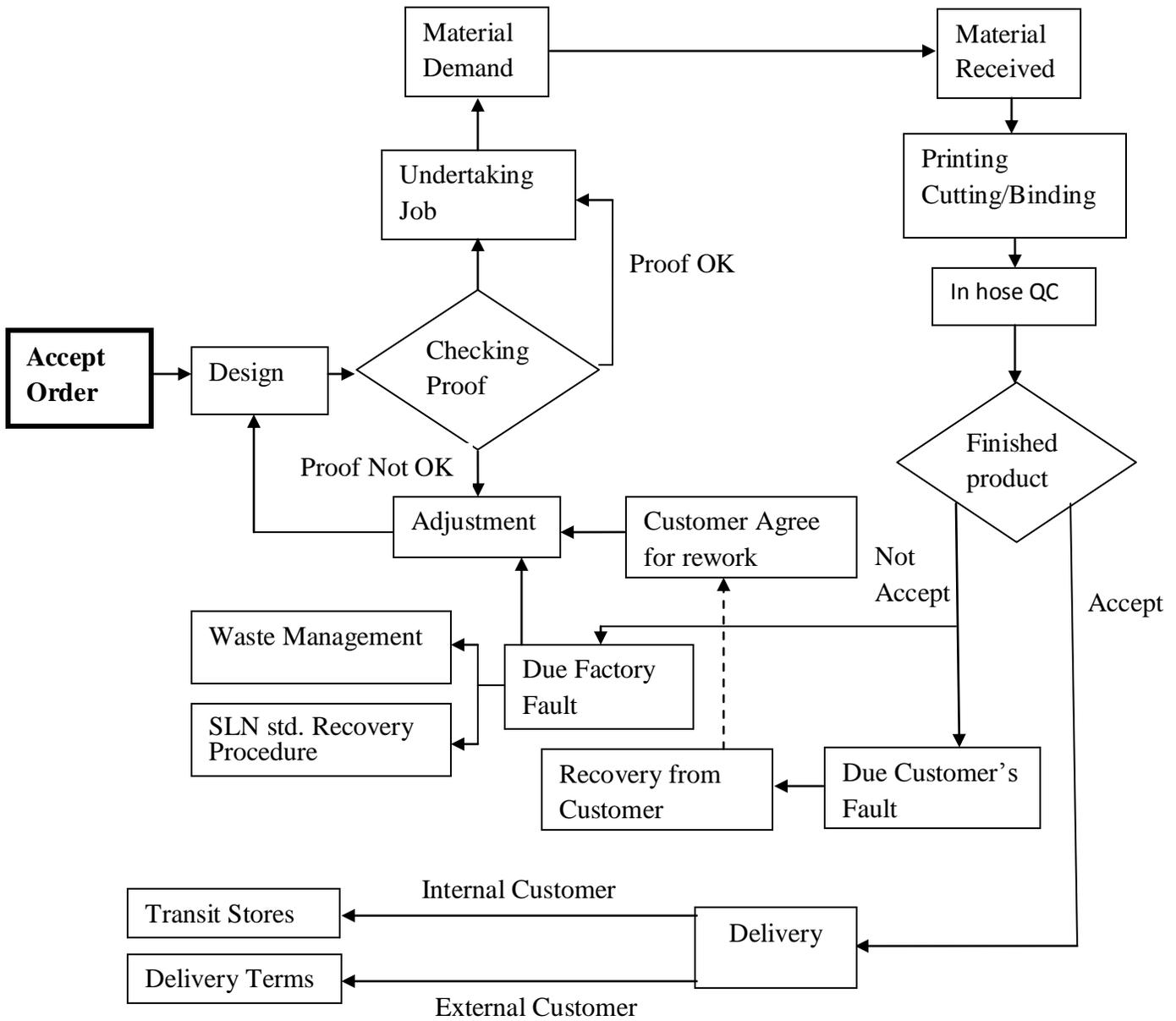


Figure 3: Proposed Production Module

Year Planning Module

55. The prime objective of acquiring of this heavy duty machine is to be a self saturated body over the printing requirement and to save huge amount money seeping away from SLN votes for printing works. An annual production plan has prepared based on the existing printing jobs being undertaken by the Printing Unit, Welisara. The proposed plan is shown at Table 2.

Month \ Job	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Training Documents							Green	Green	Green			
Greeting Cards, Calendars, Diaries			Orange							Orange		
Logistics Dpt. Forms/ Docs									Blue	Blue	Blue	
Advance Training Documents		Purple										
NAV / Other forms					Blue	Blue						
Medical Dpt. Forms/ Docs												
Engineering Dept. Forms/Doc's	Red											
Electrical Dept. Doc's								Light Green				
Civil Engineering Dept. Forms/Doc's				Grey								

Table 2: Annual Printing Plan

56. SSO (PU) should determine the annual internal production plan based on the information collected from internal customers (DGs, AAs, Cos and OICs) as indicated at Para 47. Also the external jobs could be accommodated after undertaking the internal printing works depend on the spare capacity available.

Finance Module

55. The finance module will be undertaking the all financial related matters. The management of finance shall be undertaken by Staff Officer Procurement (Printing Unit) – SOP (PU). Since the printing unit is intent to function as a corporate venture necessary working capital is required to be maintained at a healthy state. The main financial outlay is the expenses to be incurred to purchase material. The material requirement would depend on annual internal production plan and the unpredictable external printing jobs.

56. Therefore a special provision should be allocated from annual budget for Printing Unit based on the annual internal production plan in order to meet the expenses related to procurement of material. Also it is proposed to obtain Rs. 1 million advance from SLN Welfare fund in order to meet expenses related external demand. In addition it is also advisable to allocate a cash imprest worth Rs. 1000,000.00 to meet the sundry expenses considering the nature of the business.

57. The finance management in printing process is taken place at several stages;

Income

- a. Receipt of 25% advance fee from external customers
- b. Receipt of 75% of balance payment from external customers
- c. Receipt of full payment from internal printing jobs on completion of quality inspection
- d. Receipt of recovery related to faulty products due to customer's/ employees fault
- e. Receipt from waste management procedure

Expenses

- a. Payment to suppliers for material
- b. Machine maintenance cost
- c. Settlement of utility bills (Electricity and water)

58. The Printing Unit may open a current account in a Government bank, to carry out the transactions. The cheques may authenticated by three Officers, DGS, SSO (PU) and SOP (PU).

59. The profit generates from the printing Unit should be treated according to the provisions reserved in Government Financial Regulations and Establishment Code. However 25% of the profit may retain with Printing Unit in order to utilize it for machine maintenance expenses after obtaining necessary approval from the Ministry. Also the retained profit initially may deposit at the Unit bank account.

60. The all over head costs directly related to the printing unit (machine maintenance cost, utility bills, business promotion expenses and other sundry expenses) shall charge to Profit and Loss Account. The annual depreciation of the machineries and equipment shall calculate on simple method based on the useful economic life. If the situation had arisen to make any special expense, prior approval should be obtained from DGS subject to SLN financial delegation.

61. The financial statements including Profit & Loss Account, Balance Sheet and Cash Flow Statement to be prepared in accordance with Sri Lanka Accounting standards and concepts. The final accounts to be submitted quarterly to DGS before 10th of the following month. The preceding year audited annual financial statements to be submitted to Commander of the Navy before 31st March and it should be available with SOP (PU) for Annual Government auditing purpose.

62. The trade discount for outside customers shall be extended as follows and the authority to grant the same shall be delegated to SSO (PU) in order to ensure the efficiency and improve the customer base.

a. Value of printing jobs between Rs. 100,000.00 and 500,000.00	-	2.5%
b. Value of printing jobs between Rs. 500,001.00 and 1,000,000.00	-	5%
c. Value of printing jobs between Rs. 1,000,001.00 and 1,500,000.00	-	7.5%
d. Value exceeds Rs.1,500,001.00	-	10%

63. The payment of salaries and emoluments to employees attached to Printing Unit shall be continued as per the current practice through SLN Pay scale. A special allowance shall consider to pay for the employees performing duties after normal working hours as a motivation factor. The allowance shall consider paying 30% from daily salary per hour.

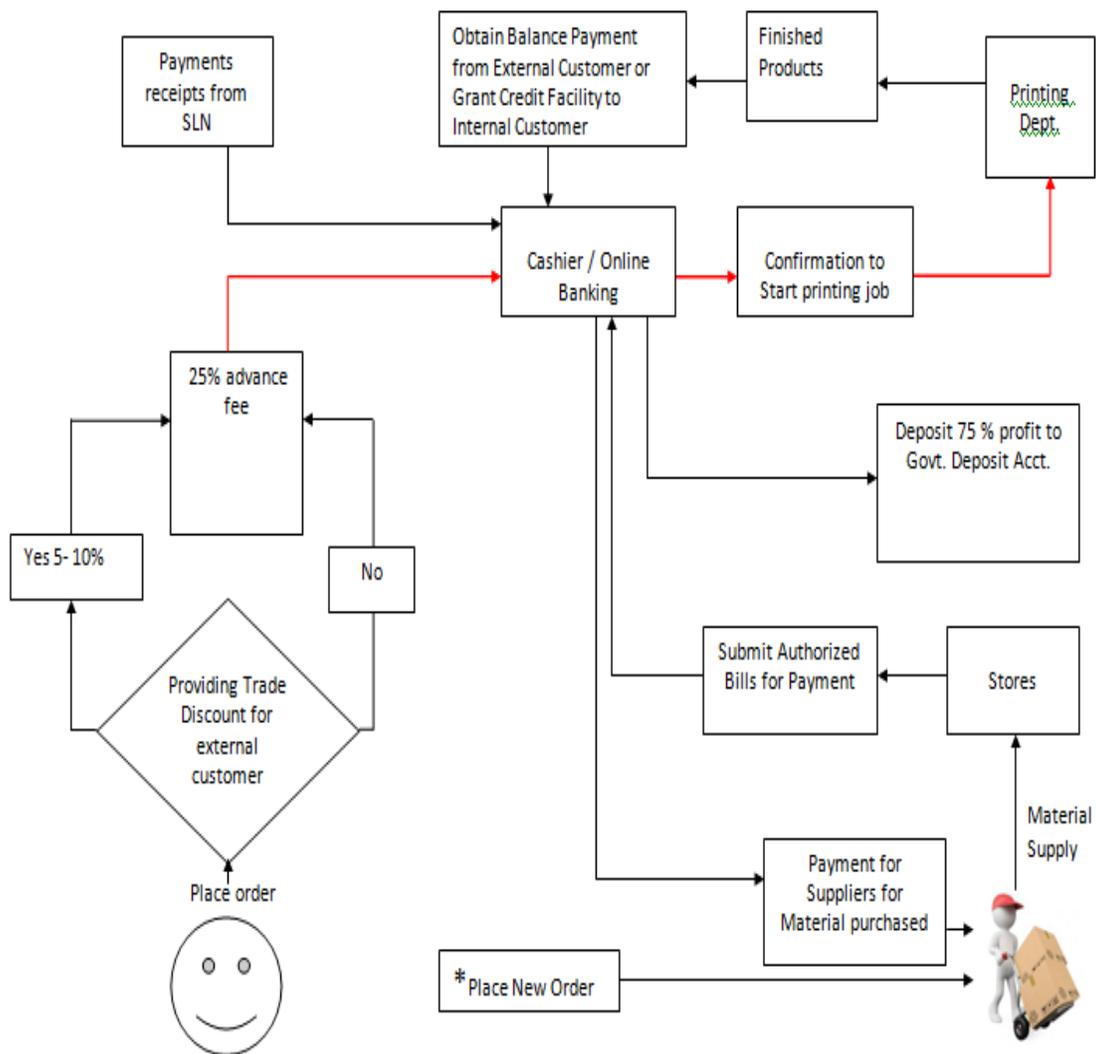


Figure 4: Proposed Finance Module

Capacity Enhancement

64. In order to stay competitive in the market and to acquire best industry practices, acquisition of following machineries is essential.

- | | |
|--|-------------------------|
| a. Heavy duty colour printer for non economical jobs | Approx cost Rs. 0.5mn |
| b. Die cutting machine for design cuts | Approx cost Rs. 4mn |
| c. 02 No's High-end computers for art designers | Approx cost Rs. 0.5mn |
| d. CTP machine for cutting of printing plates. | Approx cost Rs. 150mn * |

* Note: The printing unit is currently purchasing printing plates at a unit cost of Rs. 800.00 and approximate annual requirement is 2000 plates amounting Rs. 1.6 million. Therefore, comparing the machine cost of Rs. 150 million, it is advisable to continue the existing practice rather than acquiring a new machine for the purpose.

61. Following infrastructure facilities to be improved as follows.

- a. Offices space for OIC, 2IC, Logistic Coordinator / Supply Officer, Designers, Admin duties, Reception area and Store area.
- b. Offices / Stores to be air-conditioned in order to safety of equipments and stores.
- c. Attachment of one light vehicle and Motor bike for administrative duties.

62. The attached staff to be in permanent basis in order to job specialization.

63. It is compulsory to establish a front office at the main entrance for the convenience of the customers.

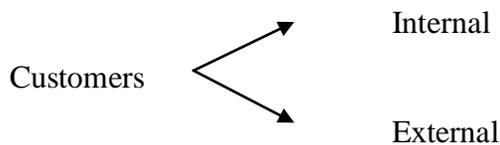
64. Machine was acquired very recently with the intention to cater for in-house requirements. However, as per the findings, there is a spare capacity which can be utilized to undertake printing works of corporate sector as a revenue generating body.

65. Developing a dedicated web page for Naval printing unit with all product details to facilitate customer inquiries

Marketing Management Module

66. Marketing is pre-requisites to establish maintain and enhance long term customer relationship and remain profitably in the market.

67. The target market for the SLN printing unit is as follows;



68. **Internal customers (SLN).** Internal customers refer to all stake holders within the navy who seek the service of printing unit in order to fulfill their printing needs.

69. **External customers.** External customers refer to customers of the corporate sector who seek the service of SLN printing unit.

70. In order to acquire external customers it is essential to launch a comprehensive marketing plan with clearly defined objectives and target group..

a. **Marketing objectives** To acquire as many external customers as possible based on the extra capacity in hand.

b. **Market segmentation and targeted Group** The target market of the printing unit are as follows;

- i. Public sector
- ii. Private sector
- iii. Small and Medium Enterprises (SME)
- iv. Individuals or group of people

- c. **Communication strategy** The proposed communication strategy is as follows;

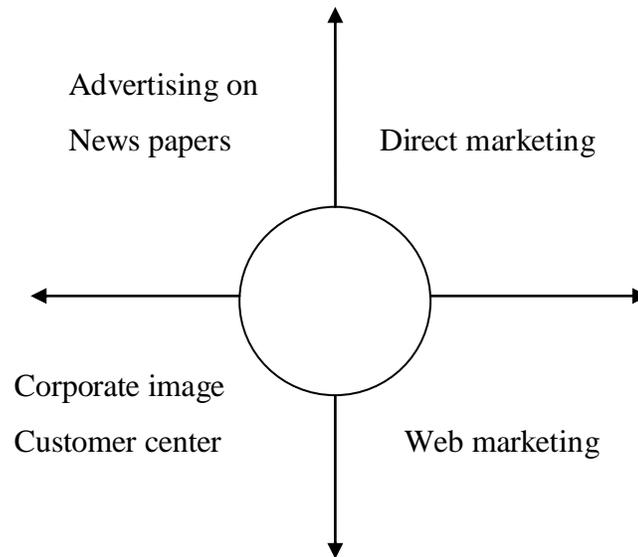


Figure 5: Communication Strategy

- d. **Advertising.** Advertising makes SLN printing venture known to public. Newspaper advertisements, and leaflets about the LSN printing venture are proposed as modes of advertising.
- e. **Direct marketing** Presentation of products and service to potential clients after meeting them at their place of business using sales team is proposed as the direct marketing mechanism to be adopted by SLN printing unit.
- f. **Web marketing** Web marketing is the most effective communication strategy that can be used to address a large number of customers. Launching of dedicated web page for the SLN printing unit and linking of printing unit website in SLN website and Malima Hospitality Services website is are proposed as the viable web marketing strategies for SLN printing unit.
- g. **Customer Center** It is proposed to have small front office near the naval fuel station at Welisara in order to ensure effective and expeditious customer service.

h. **Corporate Image** It is proposed to obtain the membership of professional bodies like Sri Lanka Printing Association in order to enhance the corporate image and present SLN printing unit among the professionals in the industry.

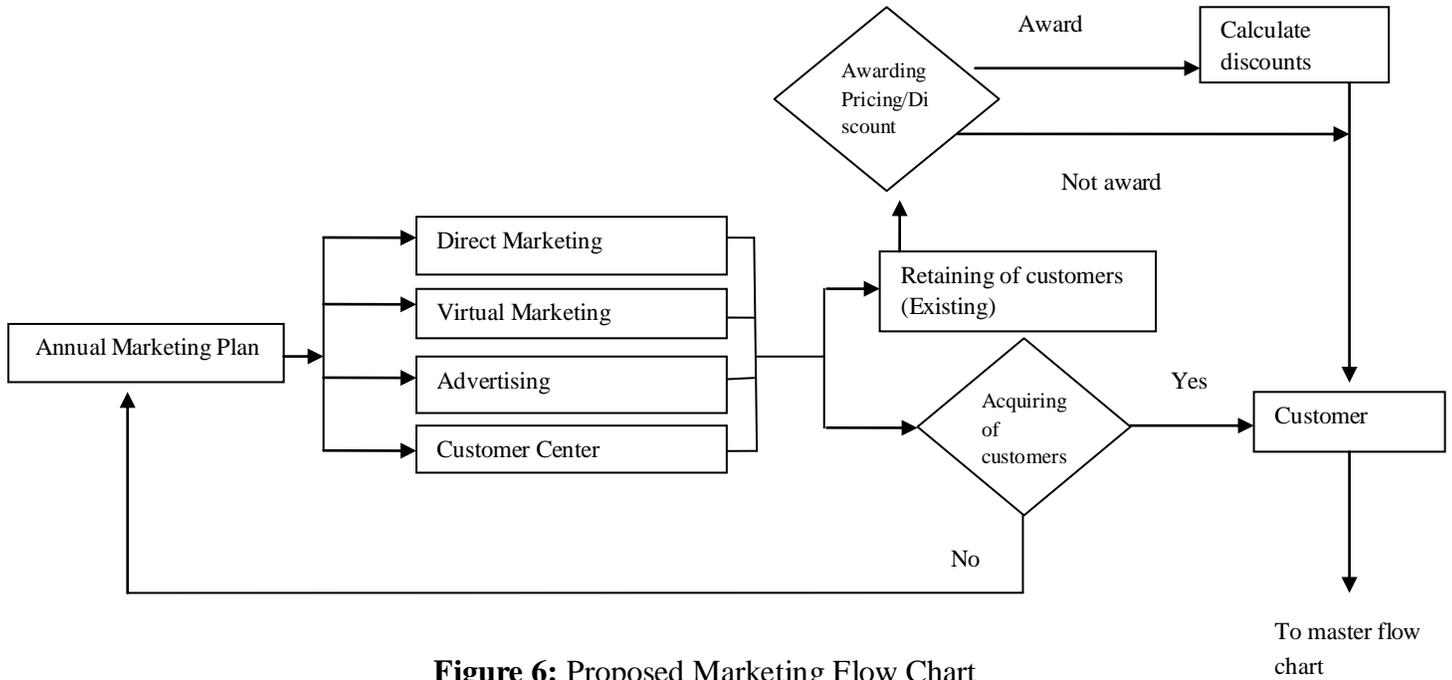


Figure 6: Proposed Marketing Flow Chart

Human Resource Management Module

71. The level of efficiency, motivation commitment of the people attached to printing are some of the critical success factors of the printing unit. Therefore managing human resources with adequate care and diligence are extremely important.

a. **Promotions/ Advancements.** When a junior sailor advances to the next rate, specially leading rates to Petty Officers it is not suitable to keep that senior sailor in the same position. If any senior sailor required to remain due to the experience and supervisory purposes he may allow to continue in the Printing Unit.

b. Retirements from the service.

c. Person who living far away from Wellisara. They normally demand with long period of leave as well as transfers to nearby places to their residence. Keeping them for a longer period may cause de-motivation and reduce their performance which we highly expect from them.

72. Hence it is required to have a pool of resource personnel. For selected persons can train and keep with their normal jobs and get down when required to full fill vacancies.

73. It is observed that the Navy Printing Unit operates two shifts (from 0800 hrs to 2200 hrs) to cater the present demand receiving from internal customers. When consider the capacity of the machine at the moment it is not fully utilized. The higher productivity can be achieved in future with the experience of the staff and more work. The full capacity of the machine, is approximately 300,000 numbers of prints per day.

74. The total printing operation can be divided in to three phases as indicated below;

a. Pre Press (Designing)

b. Press (Printing)

c. Post Press (Cutting, Binding, Finishing etc)

75. Other than that this printing process generates some vacancies in supportive fields such as procurement, marketing and administration. It is essential to select suitable people carefully

for those positions since that is directly affect to full utilization of the printing machine as well as get maximum output.

76. Human Resource Requirement - Estimated

JOB	PER SHIFT	FULL (THREE SHIFTS)	SUB TOTAL
i. Press /Printing (Machine Operators)	02	06	
ii. Post Press Work			
(i) <i>Cutting</i>	02	06	
(ii) <i>Binding</i>	02	06	
(iii) <i>Finishing</i>	02	06	24
iii. Supportive Work			
(i) Procurement			
<i>Pre Tender work</i>	01	01	
<i>Stores & Post Tender</i>	01	01	
(ii) Marketing Representative	-	02	
(iii) Maintenance			
<i>Mechanical Technician</i>	01	01	
<i>Electrical Technician</i>	01	01	
(iv) Clerical Work	01	01	07
iv. Management			
(i) <i>Overall In-charge</i>	01	01	
(ii) <i>Procurement & Admin</i>	01	01	
(iii) <i>Marketing & Material Planning</i>	01	01	03
Total	16	34	

Table 3: Human Resource Requirement

Training

77. The technology in the printing field is rapidly changing. Hence it is essential to educate employees and empower them with new knowledge. By carrying out an annual appraisal on new

innovations in printing field and the demand, management can decide the need of gaining such knowledge and arrange staff trainings accordingly.

78. Training of newly selected people need to be arranged under the best providers in the industry such as Government Printers as well as having on the job training sessions at navy printing unit.

Provisions of Incentive

79. Arranging an incentive system is an important matter to motivate people in the unit and to get maximum output from them. Based on individual contribution for the production and minimum target levels, such incentives are to be granted. The management needs to set targets for individuals and reset those targets time to time.

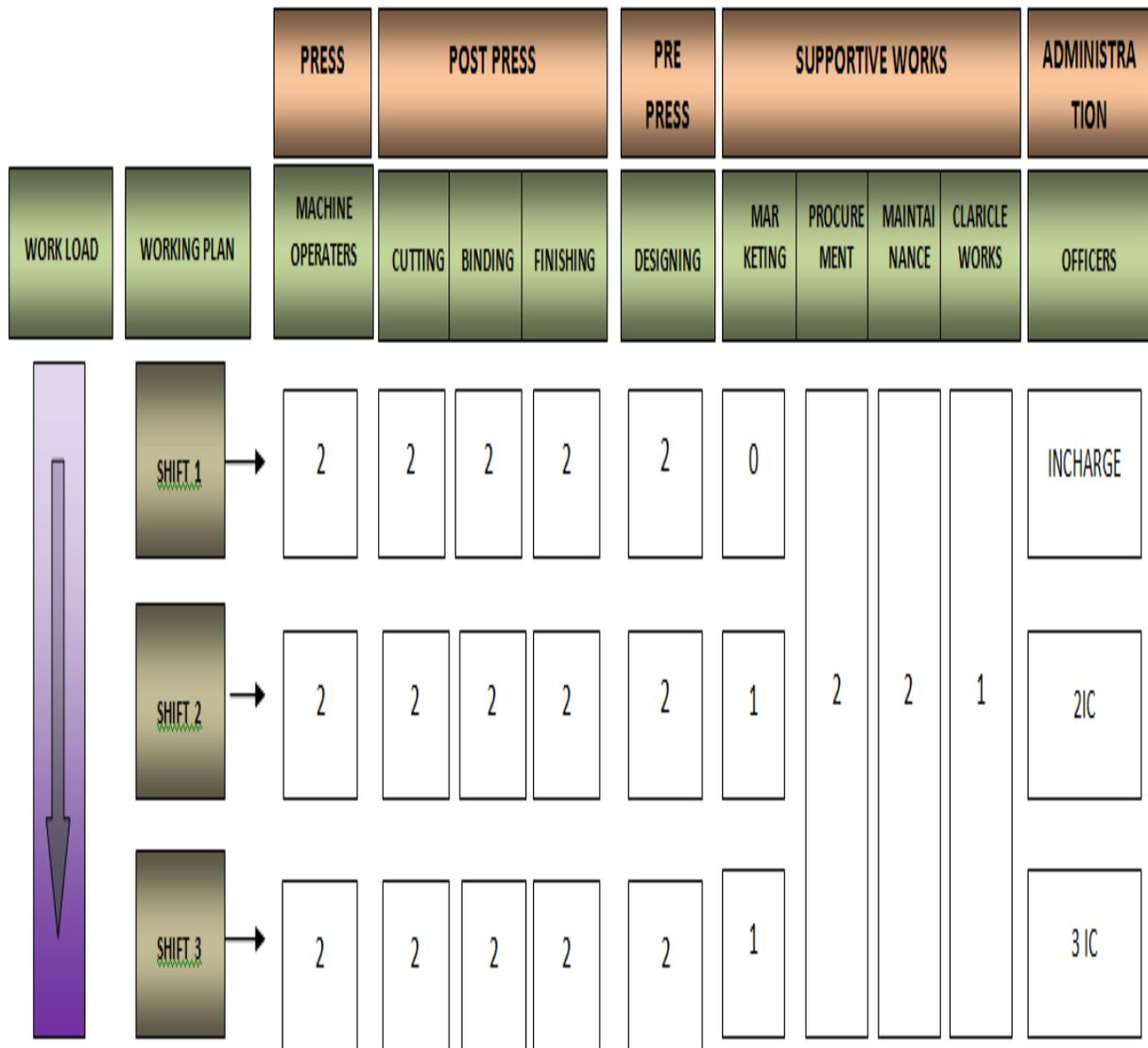


Figure 7: Proposed Human Resource Management Module

Waste Management

80. It is important to have good knowledge on reducing waste. Everyone in the process has to work with having an idea of that. From the designing stage it should be highly considered. Following are the major waste generate by the process.

- a. Paper
- b. Solvents
- c. Ink containers
- d. Aluminum Plates

81. It is important to take prompt action to minimize waste rather than taking dispose action that generates another cost to the institute. Hence actions to be taken to avoid waste by using raw materials more efficiently by decreasing off-cut waste and converting more in to product. And re use materials such as blank side of used papers for press setup and make ready works instead of using new papers. And at last dispose other waste materials safely and lawfully.

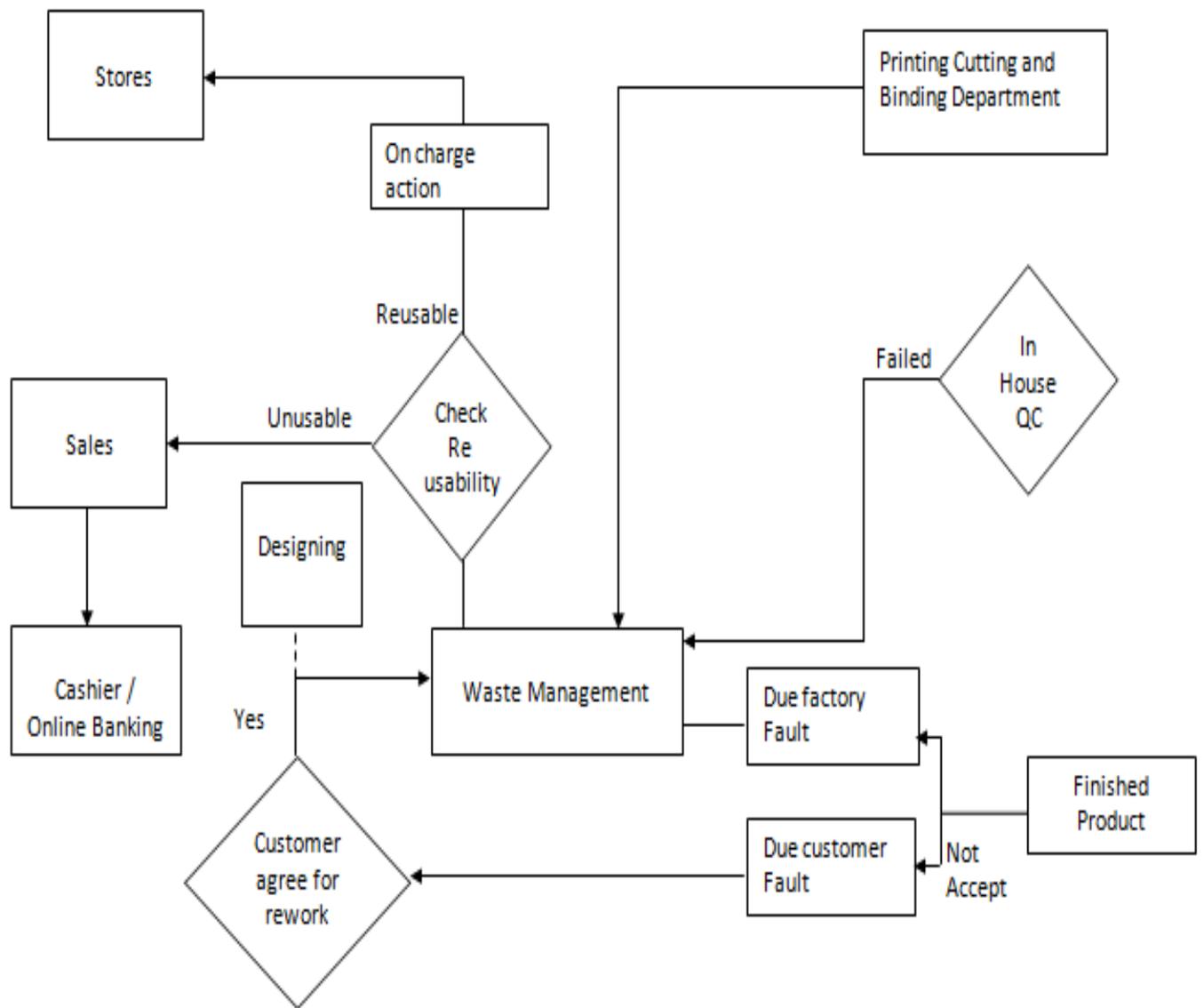


Figure 8: Proposed Waste Management Module

CHAPTER VI

CONCLUSION

82. The printing industry has become a very lucrative business in the country. Printing industry is highly dynamic. Printing technologies are changing frequently with the phase of the technological changes taking place today. Sri Lanka Navy spends a colossal amount of money for its printing needs annually. The printing industry in Sri Lanka is dominated by a few organizations that have been in the industry for decades. Therefore there is a higher possibility for a new vendor to enter in to the market. SLN decision to purchase a fully fledged printing machine is a viable solution to undertake SLN printing needs at a very economical rate than prices charged by big players in the industry. By having undertaken own printing needs in-house SLN will able to save Rs 1.4.mn annually.

83. Sri Lanka Navy has 29 sailors who have been trained at the government press on printing technology and best industry practices. Those trained sailors are presently attached to SLN printing units and engaged in fulltime printing duties. Sri Lanka Navy has different categories of printing requirements and total annual cost of these printing requirements amount to Rs 35 million annually.

84. The total operational capacity of the machine is more than the capacity required to cater annul printing requirement of the Navy. Therefore, the spare capacity of the machine can be utilized under take orders for printing requirements of external customers.

85. Therefore, having considered all these factors it is concluded that spare capacity of printing machine at SLN printing unit can be utilized to provide printing needs of the external customers through the implementation of proposed ERP module.