

Final Report: The Designed Financial Management Information Systems for Coast Provincial General Hospital, Kenya

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ACRONYMS AND FLOWCHART ABBREVIATIONS

A.L	-	Appointment Letter
A.R	-	Assets Register
Ad. Form	-	Admission Form
C.Sheet	-	Case sheet
CB	-	Cash Book
Cq	-	Cheque
Cr. Form	-	Credit Form
Cr.Lg	-	Creditors Ledger
D. L	-	Debtors Ledger
D.N	-	Delivery Note
G.L	-	General Ledger
G.R.V	-	Goods Receipt Voucher
Imp. Vc	-	Imprest Voucher
Inv. Reg	-	Invoice Register
Inv. Rep.	-	Investigations Report
Inv.	-	Invoice
Is.Dk	-	Issue Docket
LPO	-	Local Purchase Order
LSO	-	Local Service Order
Med-card	-	Patient medical card
NHIF	-	National Hospital Insurance Fund
P. R/I.P.R	-	Purchase Requisition
P.L	-	Price List
P.V.	-	Payment Voucher
Presc.	-	Prescription
Q.C/Q.C.R	-	Quality Control Report
QT	-	Quotation
Recpt	-	Receipt
S.D	-	Staff Debtors
S.L	-	Stores Ledger
S.R	-	Stores Register
St. Rq	-	Staff Requisition

PREFACE

This is the Final Report on the review and design of Financial Management Information Systems for Coast Provincial General Hospital.

The Consultancy has been carried out in three phases. The first phase involved the development of a fact-finding questionnaire that was to be used in the collection of data and information. The second phase involved the documentation of the existing financial management information systems with highlights on weaknesses and our recommendations. The last phase is the production of this report which is a design document of the desired systems with detailed options, technical specifications and market based cost estimates.

The process of carrying out the Consultancy has been through document reviews, discussions and interviews. We have held discussions and interviews with a wide range of people to whom we are greatly indebted.

We would, however, wish to specifically thank the following people whose contribution to the preparation of this report is immense; Dr. Getambu, Chief Administrator, Coast Provincial General Hospital; Dr. Shariff, Provincial Medical Office of Health, Coast Province; Mr. C.M. Katua, Accountant, Coast Provincial General Hospital; Dr. MacFarlane of Chogoria Hospital and Dr. Salvador of Kikuyu Hospital.

We also acknowledge the contribution of M/S Jay L. Clark, Rudolph Chandler and Silas Njiru of Management Sciences for Health who provided very useful comments at every stage of the Consultancy.

EXECUTIVE SUMMARY

- i) The review and design of Financial Management Information Systems (FMIS) for Coast Provincial General Hospital (CPGH) is aimed at assisting the Hospital management to improve planning, budgeting and the monitoring of departmental revenue and expenditure performance. It is part of a wider restructuring and re-engineering process that the hospital is undergoing which should cause substantial improvements in the hospital performance in all areas. The other components of the process include changes in managerial structure, right sizing staff, clinical resource management and non-core cost savings.
- ii) The Consultancy has been carried out in three phases:
- Phase one involved the design of a questionnaire which was to be used in the collection of data and information from the Hospital. This culminated in the production of an Institutional Fact Finding Questionnaire which was approved by AFS.
 - Phase two involved the actual collection of data and information through discussions and interviews with hospital staff. This led to the production of an Interim Report which documented the existing Financial Management Information Systems, detailed our findings and recommendations for improvement.
 - Phase three, which is the subject of this report is the production of a final report containing Design document with detailed options and technical specifications and market based estimates.
- iii) As in any other Re-engineering process component, the success of the implementation of this FMIS will entirely depend on the institution of the following key facilitators:
- Clarity and Consistency of vision. Sight should not be lost at any time of the key objective of the implementation of the Financial Management Information System.

- The system must be supported by both the Board of Trustees and the Senior Hospital Management for it to succeed.
 - As the key mission of Coast Provincial General Hospital is the provision of medical services, then physicians must be involved at all stages of the system implementation.
 - Any new system requires thorough preparation and training. It is expected that an action plan for implementation with clear benchmarks will be formulated before the first stages of the implementation of the system.
- iv) CPGH is a public institution and whether as in its present status, or in a semi-autonomous status the emphasis on its management will continue to strongly emphasise on ensuring that service costs are managed within predetermined reimbursement or budget levels. As a consequence, evaluation and monitoring features have been incorporated in all the individual subsystems in the form of production of regular reports.
- v) The selection criteria of the software to be adopted in the implementation of the FMIS has taken into account the following important factors:
- Flexibility. The systems selected are flexible enough to cope with different management styles.
 - High level of integration. All subsystems are integrated enabling different departments to work together easily as well as facilitating the capture of vital information at source and only once.
 - Consistent work and feel. The softwares proposed have clear prompts with well designed screens that carry a lot of information, real time updates and a simple and easy to use menu structure.
 - Software support. The quality of support both during and after implementation of the FMIS will be critical to its success.

- Adaptability to an open operating system. The fact that the proposed softwares are not wedded to any particular computer architecture ensures that CPGH is able to benefit to the full from the competition between Hardware manufacturers.
- Training. The softwares are very user friendly and will only require basic training for one to be able to operate.

PATIENT REGISTRATION SYSTEM

Key Objective

- 1.0 The capture of demographic, clinical and financial information in respect of each patient to enable Hospital Management extract and analyse data for a wide variety of purposes including cost analysis, medical audit and procedures analysis.

Key Features of the Designed System

- 1.1 The Patient Registration System will capture the following data, which will be password protected to ensure that unauthorized personnel do not have access to it:

- Patient Identification Number
- Patient Name
- Sex
- Location
- Sub-Location
- Date of first interaction with Hospital
- Date of last interaction with Hospital
- NHIF Number
- Service centres (Outpatient Clinics, Laboratory, Theatre)
- Diagnosis
- Procedures

- 1.2 The Patient Registration System will hold price details, which cannot be changed without proper Authorization. This authorization to change the prices will be vested in the Deputy Administrator, Accounting services who will be issued with an appropriate password

- 1.3 The Patient Registration System will hold Ward Records whose access will be restricted. These records will include:

- Ward Number

- Total Number of beds
 - Current occupancy details
 - Bed Number
 - Patient Identification Number
 - Patient Name
 - Date Admitted/Transferred
 - If Transfer, ward transferred from
 - Diagnosis
 - Procedures
 - Expected date of Discharge
 - Past occupancy details
- 1.4 The system will hold diagnosis records whose access will be restricted:
- Diagnosis Code
 - Diagnosis Description
- The system will hold procedure records whose access will be restricted:
- Procedure codes
 - Procedure descriptions

Systems Flowchart

- 1.5 Chart I of this Report is a flowchart description of the Outpatient Registration System. The chart shows the movement of patients and the flow of documents from the time a patient arrives at the Hospital to the time the patient leaves. To assist in the understanding of the flowchart, operational numbers are shown against the relevant operational description at the bottom of the chart.
- 1.6 Chart II of this Report describes the Inpatients Registration System. The proposal that the Nursing Sister presently located in the NHIF Cashier's office is allocated a Cash Register, (Work Station) to be generating invoices will make the cash receiving process faster than it is at present without any increase in costs.

1.7 The Reports to be generated by the system are:

- Summary of inpatients by ward
- Patient admission statistics
- Outpatient statistics
- Maternity statistics
- Diagnosed case
- Daily audit
- Daily Department totals
- Daily Bed return
- Case mix analysis (Average cost of treatment)

The Reports can be configured in any format to include any further information that the Hospital Management would desire.

CASH MANAGEMENT SYSTEM

Key Objective

- 2.0 To ensure that all the services rendered by the various departments of the hospital are paid for and the cash received is accounted for.

Key Features of the designed system

- 2.1 All the cost centres will be coded and any cash received will be allocated to these cost centres.
- 2.2 At the end of the day or shift, the Accountant will retrieve from the system a summary of all cash receipts by Cash Register and by Cashier. The respective Cashiers will be required to surrender their collections at the end of the day or shift to the Chief Cashier for intact banking the following banking day.

Systems Flowchart

- 2.3 Chart III is a flowchart description of the cash management system. All the Cash Registers will operate on Local Area Network. They are highly integrated and cash can be received at any Cash Register. As a security measure, each cashier is issued with a secret password without which he/she cannot access the system.
- 2.4 The following Reports will be produced by the system:
- Daily Sales Summary
 - Daily Cash Bankings
 - Daily Product details
 - Daily Departmental totals

CHEQUE PAYMENTS

Key Objectives

- 3.0 Payments are only effected for valid Hospital transactions and such validity is evidenced.

Key Features of the Designed Systems

- 3.1 The proposed cheque payments system assumes a semi-autonomous status for the hospital. The system is designed to ensure that payments are only made for bona fide supply of goods and services to the hospital.
- 3.2 It is proposed that an Accounts payable section be created in the Accounts Department. This section shall be responsible for the processing of all payments including ensuring that all the necessary documents are availed by the respective departments. The section should also be responsible for cheque writing and follow-up of cheques with the signatories. The section should also be responsible for mailing of signed cheques.
- 3.1 A cheque should be signed by at least two signatories from amongst the Hospital Senior Staff. One mandatory signature should be that of the Deputy Administrator, Accounting services.

Systems Flowchart

- 3.2 Chart IV is a description of cheque payment system. It shows the flow of documents from the time supplier's invoice is received in purchasing department to the time when the cheque payment is posted to the cash book. The various Internal Controls have been incorporated to ensure that no payment is made unless supported by all the necessary documents.
- 3.5 The cheque payments system is integrated to the other systems. This system will produce the following Reports:
- Unrepresented cheques
 - Bank reconciliations

DEBTORS MANAGEMENT SYSTEM

Key Objectives

- 4.0 To ensure that amounts due from patients with credit facilities are correctly recorded and settlements are effected within the agreed terms of the credit facility.

Key Features of the Designed System

- 4.1 The Hospital has three category of Debtors; NHIF, Trade and Staff Debtors. Each of them has their own unique features.
- 4.2 Patients using the NHIF facility should comply with the terms stipulated by the Institution. The Hospital Administration should ensure that patients are informed of these conditions at the time of admission.
- 4.3 The hospital should formulate the conditions that should be met by patients from organizations having credit facilities and ensure that these conditions are met.
- 4.4 The hospital administration should tighten the regulations on the drawing of imprests.

Systems Flowcharts

- 4.5 Chart V to VI shows the flow of documents in respect of NHIF, Trade and Staff debtors respectively.
- 4.6 The system will generate the following reports.
- Statement of account for the category of Debtors.
 - Aged NHIF Debtors Listing.
 - Aged Trade Debtors Listing.
 - Aged Staff Debtors.

CREDITORS MANAGEMENT SYSTEM

Key Objectives

- 4.0 To ensure that liabilities for Creditors arise from valid liabilities and are correctly recorded.

Key Features of Designed System

- 5.1 The designed Credit Management System can operate both as in the present environment as well as in a Semi-autonomous environment. The reference to the District Tender Board can be substituted by the Hospital Tender Board in a semi-autonomous environment.
- 5.2 The credit management system describes the Ordering, Delivery and Invoice Approval procedures for the Hospital.

Systems Flowchart

- 5.3 Chart VIII describes the flow of documents from the time a Hospital Department requisitions for a good (Drug, Foodstuff, and Equipment) to the time payment for such a good is effected. The system incorporates various Internal Controls that ensure that only goods which are ordered are received and paid for.
- 5.4 The system will produce the following Reports:
- Creditors Listing
 - Schedule of rejected supplies
 - Listing of outstanding orders
 - Listing of partially completed orders
 - Listing of purchases not exceeding Kshs. 3,000/-
 - Listing of purchases in the range of Kshs. 10,000/- and Kshs. 200,000/-
 - Listing of purchases in excess of Kshs. 200,000/-

STOCK MANAGEMENT SYSTEM

Key Objectives

- 6.0 To ensure that all stocks received at the Hospital stores are correctly recorded and that issues are only effected on proper authorisation.

Key features of the Designed System

- 6.1 The designed Stock Management System has two components; the Receipt of stocks and the issue of stocks. The system can operate in both the present circumstances as well as in a semi-autonomous environment.
- 6.2 The designed system describes the receipting storage and issue of goods and the accompanying approval procedures within the system.

Systems flowchart

- 6.3 Chart IX describes the flow of documents from the time the goods are received from the supplier until the goods are entered in the Hospital stores ledger. The various Internal Control mechanisms have been put in place to ensure that only goods which meet hospital specifications are received.
- 6.4 Chart X describes the flow of documents in the issuance of goods to the various Hospital departments. Internal Controls have been instituted to ensure only authorised personnel can requisition goods from the stores.
- 6.5 The Stock Management System will produce the following Reports:
- Stock position
 - Listing of all supplies received in the month
 - Listing of damaged/defective goods
 - Listing of obsolete goods including expired drugs
 - Listing of stock differences on physical stock count
 - Re-order recommendations.

PAYROLL SYSTEM

Key Objectives

- 7.0 To ensure that salaries are only paid to bona fide employees of the Hospital at authorised rates of pay and that payroll deductions are correctly accounted for and paid to the appropriate third parties.

Key Features of the Designed System

- 7.1 The designed system can only operate in a semi-autonomous environment. It assumes the Hospital will be responsible for the recruitment of staff and the payroll administration.
- 7.2 The system describes the processes involved in staff recruitment and the incorporation of newly recruited staff into the hospital's payroll. Internal Control mechanisms have been put in place to ensure that staff recruitment is in accordance with Hospital policies as formulated by the Board of Trustees and that the payroll terms are strictly in conformity with the staff's terms and conditions of employment.
- 7.3 The personnel system as distinct from the payroll system would have the following features:
- Employee static data
 - Personnel records and report generation
 - Absence monitoring
 - Leave records management
 - Recruitment management
 - Performance assessment
 - Disciplinary control
- 7.4 The payroll system will have the following features:
- Department/section
 - User defined earnings and deductions code
 - User definable tables (P.A.Y.E, NSSF, or NHIF)
 - Bank /Branch
 - Payment and deductions codes

Systems Flowchart

7.5 Chart XI describes document flow in staff's recruitment and incorporation in the Hospital's payroll. The various Internal Controls have been incorporated in the flow chart.

7.6 The payroll system can produce the following reports:

- Staffing position
- Staffing positions by department
- Staff movements
- Pay slips
- Payroll reconciliation

FIXED ASSETS MANAGEMENT SYSTEM

Key Objective

- 8.0 To ensure that additions to and disposals of fixed assets are properly authorised and that accurate records of each asset are maintained.

Key Features of Designed System

- 8.1 The Fixed Assets Management System is aimed at ensuring that Fixed Assets belonging to the Hospital are clearly identifiable and their security is safeguarded. The following details will be recorded in the Fixed Assets Register:
- Description of Fixed Asset
 - Asset Identification Number
 - Date of Acquisition
 - Supplier
 - Original cost; if donated, imputed value
 - Current valuation of Asset
 - Expected date of Disposal
 - Depreciation method and rate

Systems Flowchart

- 8.2 Chart XII describes the flow of documents in the acquisition and recording of a fixed asset. The Hospital maintenance unit will be responsible for the scheduling of maintenance of the Fixed Assets as well as carrying out a fixed assets quality assessment from time to time.
- 8.3 The system will produce the following reports:
- Schedule of Fixed Assets and their current values
 - Schedule of Fixed Assets acquired during the last one year
 - Schedule of Fixed Assets due for replacement
 - Schedule of Fixed Assets due for disposal

9.0 **BUDGETING AND BUDGETARY CONTROL SYSTEMS**

- 9.1 Budgeting and budgetary control Systems are tools that the management of an organization use to run the organisation efficiently. For budgeting to become an effective tool in the running of an organisation, all the senior members of the organisation must be involved in the Budget preparation and implementation. This will give them a sense of ownership.
- 9.2 Table I shows the roles and responsibilities at various levels of the Hospital Administration. The process of budget preparation will be Top-down. The Board of Trustees will issue broad policy guidelines, which will be translated by both the Chief Administrator and the heads of the three major departments into budgets. The Deputy Administrator, Accounting Services will play a leading role in the preparation and implementation of budgets.
- 9.3 It is recommended that the Hospital administration Team develop Budgeting systems on Microsoft Access, (MS Access). MS Access is a Relational Data Management system from Microsoft. Initially, the Hospital Administration Team will be trained on how to develop systems on MS Access.

10.0 **COSTING AND PRICING SYSTEMS**

- 10.1 The process of product costing enables an organisation to set the prices of its products and services in relation to their respective costs. In a semi-autonomous environment, the Hospital will need to adopt a policy of full cost recovery plus a sustainance margin. The magnitude of the margin will be dependent on the mission and objectives of the Hospital and the influence of other stakeholders in the industry.
- 10.2 Table II shows the roles and responsibilities of the various levels of the Hospital Administration. The product costing will start at the Cost Centre level and will involve all members of staff with supervisory responsibilities. They will be involved in the collection of data and these will be relayed upwards to Heads of Departments, the Chief Administrator and eventually to the Board of Trustees.

11.0 **SELECTION OF AN APPROPRIATE SYSTEM FOR COAST PROVINCIAL
GENERAL HOSPITAL**

12.1 The designed system is aimed at assisting the Hospital management to achieve the following objectives:

- i) Control of operations of the Hospital
- ii) Safeguard the Assets of the Hospital
- iii) Comply with policies as set out by Board of Trustees
- iv) Comply with the various sets of legislation
- v) Prepare financial statements

12.2 The designed system has incorporated Internal Controls that provide assurance that:

- i) All the transactions and other accounting information which should be recorded have in fact been recorded.
- ii) Errors or irregularities in processing accounting information will become apparent.

12.3 As a minimum requirement, any of the system to be considered will have to satisfy the following conditions:

- i) Provide facilities for Patient Registration. This would be for both outpatients and inpatients.
- ii) Provide facilities for complete capture of all charges for all services rendered by the Hospital.
- iii) Provide facilities for billing of organizations with credit facilities including the National Hospital Insurance Fund (NHIF).
- iv) Have the following modules:
 - Debtors control module.
 - Stock control module.

- Cash book and general ledger module.
 - Creditors control module.
 - Payroll control module.
- v) Incorporate budgeting and budget control.
- vi) Provide facilities for the allocation of Revenues and Costs by cost centres.
- vii) Provide facilities for the production of Reports on Actual Performance against Budget Performance.
- viii) Provide facilities for production of monthly and year-to-date performance reports.
- ix) The method of Accounting be accrual based.
- x) The Accounting System should integrate with the existing Cash Registers.

12.0 **THE SYSTEMS OPTIONS**

- 12.1 Many Computer Consulting Companies in Kenya are marketing standard Accounting packages which can be customized to meet any organization's financial management information needs. There are merits and demerits of adopting such packages. The merits include a wider usage of the base system which gives the Software Company an edge in terms of back-up service. The key demerit is the possibility of customization failing to continuously meet the requirements of the user. It is therefore necessary to consider the magnitude and cost of customization before such an option can be preferred.
- 12.2 There are financial management information systems in the market which have been developed for certain organizations which to some extent, share certain common modules with hospitals. A system developed for Supermarkets would share Cash collection, Debtors, Creditors, Stocks and Payroll modules with a hospital. Such a system would require some low level of customization to address the specific needs of a Hospital such as Patient Registration.
- 12.3 There are also Financial Management Systems which have been developed specifically for hospitals. AS would be expected, most of these have been developed for private hospitals. Whereas private and public hospitals have varying accounting and administrative requirements, the general structure and operation of all the hospitals is the same. It is therefore easier for public hospitals to adopt such a system albeit with certain modifications to address the specific public hospital requirements.

13.0 **POS-I-TILL SYSTEM**

13.1 POS-I-TILL refers to a POINT OF SALE system equipped with a Till. The system was developed by a South African Software Consulting Company for cash based businesses. It is however, a highly integrated point of sale and accounting system and can be customized to suit any business with a high turnover of cash transactions.

13.2 POS-I-TILL has the following modules with their respective features:

a) **Point –of –Sale Module**

- i) This allows access to Cash Sales and Returns, Debtors and Petty Cash. The module also gives Management Information Reports for the effective control of all point-of-sale facilities. This is an online system and files are updated immediately on confirmation of correct data.
- ii) The Point-of-sale module enables the processing of cash sale transactions, cash returns, debtors transactions including generation of invoices and the processing of petty cash drawings

b) **Stock Control Module**

The stock control system facilitates the processing of stock transactions. These include Receipts, Issues, Inter-store transfers, Returns and Adjustments. It also provides a strong tool in processing of Management Information Reports.

c) **Debtors Control Module**

This system facilitates the maintenance of an on-line data base of all debtors' details and provides for multiple stores. It also provides for the processing of debtors transactions and gives Management Information Reports for effective control of debtors.

d) **Creditors Control Module**

This system facilitates the maintenance of an on-line data base of all creditors' details. It provides for the processing of creditors' transactions

and gives Management Information Reports for effective control of creditors.

e) **General Ledger Module**

This system facilitates the production of a cashbook, the capture of standard journals, the production of various reports including a General Ledger, Trial Balance, Income Statement, Balance sheet and Budget Report.

14.0 **HOSPITAL MANAGEMENT INFORMATION SYSTEM (HMIS)**

14.1 HMIS was developed locally in 1989 for one of Nairobi's Leading Private Hospitals. Over time, the system has seen substantial improvements making it a system of choice for medium to large Hospitals in Kenya.

14.2 HMIS has the following modules with their respective features:

a) **Inpatient & Billing Modules**

- i) This module provides for the Inpatient Registration, Admissions, Bed Transfers and Discharges.
- ii) It provides for an online billing facility and is able to capture relevant details from other modules as to allow for NHIF debates, Laboratory tests costs and Pharmacy costs.
- iii) It has a powerful tool that facilitates the production of Management Information Reports on Admissions, Bed Occupancy, Laboratory statistics, Debtors etc for effective control of the Hospital operations.

b) **Outpatient Module**

This module provides for the Outpatient Registration. It has a credit control facility. It also has an online billing facility with linkages to other service centres such as Laboratory, Pharmacy etc.

c) **Debtors Control Module**

The system facilitates the maintenance of an on-line database of all debtor details including categorization of debtors (individual company, Government Departments), credit limits, linkages to inpatient and outpatient billing modules, the receipting module and the general ledger. It has a powerful tool that facilitates the production of On-line statements of Accounts and Aged balances.

- d) **Stock Control Modules**
- i) The system has two distinct stock control modules; the Pharmacy and the General Store Modules. Both facilitate the processing of stock transactions. These include the receipts issues, Interstore issues, Transfers, returns and adjustments.
 - ii) The systems have facilities that provide for the production of reorder levels, purchase recommendation, online generation of LPOS, stock level reports and stock valuation reports.
 - iii) These modules are linked to inpatients and outpatients billing systems, receipting/payments systems and the general ledger.
- e) **Creditors Control Module**
- This module facilitates the maintenance of an on-line data base of all creditors details. It has a powerful tool that enables it produce management information reports on statements of Accounts and Aged Balances.
- f) **General Ledger Module**
- This module provides for the charting of Accounts as well as providing for cost and revenue centres. It facilitates the production of Departmental Profitability reports, Trial balance and other User defined Management Information Reports. It is linked to all subsidiary ledgers.
- g) **Cash book Module**
- This is a password protected module. It allows multi-cash points as well as shifts. It is an on-line system and prints receipts, processes refunds and payments and even generates cheques. It is linked to all subsidiary ledgers. The system provides for the performance of a Bank reconciliation.

h) **Payroll Module**

This module facilitates the processing of payroll. It provides for user defined earnings and deductions codes, user programmable tables and supports branches, departments and sections. It also maintains records on savings and loans. It has cheque writing features and generates cheques as well as cash payment schedules. It has linkages to both the cash book and general ledger.

15.0 **CCL-CHIPS – FIXED ASSETS MODULE**

15.1 The CCL-CHIPS Fixed Assets module was developed by Computer Consultants Ltd., a local consulting firm. This is a highly interactive personal computer based system that can be integrated into any Local Area Network system.

15.2 The Fixed Assets module maintains details and information of all fixed assets in an organization. All the fixed assets are assigned personal identification numbers and all information related to the respective fixed assets loaded to the system.

15.3 The Fixed Assets module monitors the following information:

- Description of fixed asset
- Make/model
- Date of purchase
- Document of title
- Location
- Original cost (or imputed value)
- Depreciation method
- Insurance details
- Movable or immovable

15.4 The Fixed Assets module has facilities for the production of the following reports:

- Fixed Assets Register
- Transaction Report (schedule of fixed assets acquired during the year)
- Location of Fixed Asset
- Fixed Asset group listing
- Schedule of Fixed Asset due for replacement
- Schedule of Fixed Assets due for disposal
- Schedule of obsolete Fixed Asset
- Schedule of maintenance of Fixed Assets in the coming year

16.0 **CCL-CHIPS PAYROL SYSTEM**

16.1 This payroll system was developed by Computer Consultants Ltd. It has been designed to meet payroll specifications from a wide range of users. It has had substantial improvements and ranks as one of the best payroll systems in the country.

16.2 The payroll system is a PC based highly interactive system. It keeps track and records on the following :

- Earnings
- Deductions
- Benefits
- Loans
- Overtime
- Pension and provident –funds

16.3 The payroll system allows users to define their own payments and deductions using a range of codes incorporated in the system. Access to the system is, however, password protected and features such as stopping of payments amendments and return of reports would require special authorization.

16.4 The system provides facilities for the production of a wide range of reports; among these:

- Pay slips
- Month –end cash listing
- Bank Transfer payments
- Cheque payment listing
- Print labels for envelopes
- Payments/deductions by code
- Credit advice slips
- Payroll analysis by departments

- P9, P9A, PIO forms
- NSSF year-end report
- NHIF year end report

17.0 **TECHNICAL REQUIREMENTS FOR POS-I-TILL OPTION**

17.1 For efficient delivery of services, the POS-I-TILL option would require the installation of workstations to address the areas shown below:

	<u>Module</u>	<u>Number of workstations</u>
1	Patient Registration	1
2	Cash Management (collection)	5
3	Debtors Management system	1
4	Stock Management system	
	- Medical & surgical stores	1
	- Foods store	1
	- Hospital maintenance stores	1
5	Creditors management system	1
6	General ledger	1
7	Fixed Assets	1
8	Payroll	1
	Total	14

Note:

1. One Cash Register at casualty to be dedicated to the Registration of patients only.
2. The Cash Registers for cash management system are the existing Terminals; NHIF, Laboratory, Casualty, Pharmacy and Maternity Cash Registers.
3. One Cash Register will be used by the verification Nursing Sister at the NHIF Cashier's Office to process invoices.
4. Three workstations will be located in Accounts Department to process creditors, fixed assets and general ledger. They will also be used in MS-Access systems development.

17.2 The technical specifications of the hardware to be installed to operate the POS- I TILL system is as follows:

	Hardware	Units	Specification	Total cost (Kshs)
i)	Server	One	Pentium II 400 MHz processor 128 MB Memory 13.5 GB SCSI hardware 512 KB cache 1.44 MB Floppy diskette drive CD ROM Drive Back-up Tape '5 I/O Slots - 2 x PCI and 3 x ISA Expansion slots 10 Mbps Ethernet card 14" SVGA colour monitor Key board and users Systems view – system management software 3 years on site warranty	500,000.00
ii)	Cash Register	6	Already in place	-
iii)	Workstations	8	Pentium II 300 MHz with MMX Technology 32 MB RAM 4.3 GB Hard disc drive PCI motherboard 104 Enhanced keyboard 14" colour monitor 1.44 MB Floppy Disc drive CD ROM Drive Pre-installed windows 98 Network card @ Kshs. 73,000.00	584,000.00
iv)	High Speed Printer	One	Epson DFX 5000	139,000.00
v)	Low Speed Printer	One	Epson LQ 2170	50,000.00
vi)	Inverter Charger	One	Back-up of one server, 6 Cash registers and 8 Workstations for a period of 8 hours.	210,000.00
	Total hardware costs			1,483,000.00

17.3 The requirements and specifications for networking is as shown below:

Network Component	Cost (Kshs)
Windows NT Server Standard Edition (14 Clients)	82,200.00
100 metres Optical Fibre Cable @380/- per metre	38,000.00
One 34 HU cabinet	82,200.00
One 60 ST Fibre Optics Patch Panel (19 inch)	19,896.00
One 24 Port Twisted pair Patch Panel	13,500.00
22 ST Duplex Adapter (multimode)	28,380.00
100 ST Fibre Optic Connectors	67,200.00
Four Universal Slice Tray	7,776.00
12 Fibre Optics patch Cord 2ST	117,504.00
30 3Metres UTP Patch Cords	30,000.00
305 Metres FTP Cable Roll	18,300.00
Ten 1.5 Metres Patch Cords	8,500.00
Ten Single Patch Cords	9,500.00
One HU Cord Organizer	3,000.00
One 4RJ45 Fibre Share Mini-Hub	60,816.00
One Fibre Optics Transceiver module +12 Port Hub	125,000.00
Cable termination and testing	50,000.00
Total Networking	776,617.00

17.4 The cost of software and training will be as follows

	SOFTWARE	COST (KSHS)
i)	POS-I-TILL	
	One Time Licence (Upgraded to 14 users)	142,000.00
	Customization	200,000.00
	Implementation Assistance	50,000.00
	Training on POS-I-TILL	30,000.00
	Total POS-I -TILL	422,000.00
ii)	CCL-CHIPS	
	Fixed Assets	72,000.00
	Payroll	72,000.00
	Implementation and user training	40,000.00
	Total CCL-CHIPS	184,000.00
iii)	MS Office 97 Professional	
	One Time Licence Fees	51,205.00
	Open Licence (Estimated 2 users @ 35,730.00 per user)	71,460.00
	Training – windows NT 2 people @ 20,000/- per person	40,000.00

	MS Word 2 people @ 5,000/- per person	10,000.00
	MS Excel 2 people @ 5,000/- per person	10,000.00
	MS Access 2 people @ 5,000/- per person	10,000.00
	Total MS Office	192,665.00
	TOTAL SOFTWARE & TRAINING	580,665.00
	TOTAL OPTION 1 COSTS	3,242,282.00

NOTE:

- i) These costs are exclusive of VAT
- ii) US\$ costs are converted @ 1US\$ = Kshs. 65/-

18.0 **TECHNICAL REQUIREMENTS FOR HMIS OPTION**

18.1 The HMIS option will require the installation of workstations to address the areas shown below:

	<u>Module</u>	<u>No. of workstations</u>
1	Patient Registration	1
2	Cash Management (collection)	5
3	Debtors Management system	1
4	Stock Management system	
	- Medical & surgical stores	1
	- Foods store	1
	- Hospital maintenance stores	1
5	Creditors Management system	1
6	General Ledger	1
7	Fixed Assets	1
8	Payroll	1
	Total	14

Note:

1. One Cash Register at casualty to be dedicated to the Registration of patients only.
2. The 5 Cash Registers for cash management system are the existing Terminals; NHIF, Laboratory, Casualty, Pharmacy and Maternity Cash Registers.
3. The cash register will be use by the verification Nursing Sister at the NHIF Cashier's office to process invoices.
4. Three workstations will be located in Accounts Department to process creditors, fixed assets and general ledger. They will also be used in MS-Access systems development.

18.2 The technical specifications of the Hardware to be installed to operate the HMIS system is as follows:

	Hardware	Units	Specification	Total cost (Kshs)
i)	Server	One	Pentium II 400 MHz processor 128 MB Memory	

			13.5 GB SCSI hardware 512 KB cache 1.44 MB Floppy diskette drive CD ROM Drive Back-up Tape '5 I/O Slots - 2 x PCI and 3 x ISA Expansion slots 10 Mbps Ethernet card 14" SVGA colour monitor Key board and users Systems view - system management software 3 years on site warranty	500,000.00
ii)	Cash Register	6	Already in place	-
iii)	Workstations	8	Pentium II 300 MHz with MMX Technology 32 MB RAM 4.3 GB Hard disc drive PCI motherboard 104 Enhanced keyboard 14" colour monitor 1.44 MB Floppy Disc drive CD ROM Drive Pre-installed windows 98 Network card @ Kshs. 73,000.00	584,000.00
iv)	High Speed Printer	One	Epson DFX 5000	139,000.00
v)	Low Speed Printer	One	Epson LQ 2170	50,000.00
vi)	Inverter Charger	One	Back-up of one server, 6 Cash registers and 8 Workstations for a period of 8 hours.	210,000.00
	Total hardware costs			1,483,000.00

18.3 The requirements and specifications for networking is as shown below:

Network Component	Cost (Kshs)
Windows NT Server Standard Edition (14 Clients)	82,200.00
100 metres Optical Fibre Cable @380/- per metre	38,000.00
One 34 HU cabinet	82,200.00
One 60 ST Fibre Optics Patch Panel (19 inch)	19,896.00
One 24 Port Twisted pair Patch Panel	13,500.00

22 ST Duplex Adapter (multimode)	28,380.00
100 ST Fibre Optic Connectors	67,200.00
Four Universal Slice Tray	7,776.00
12 Fibre Optics patch Cord 2ST	117,504.00
30 3Metres UTP Patch Cords	30,000.00
305 Metres FTP Cable Roll	18,300.00
Ten 1.5 Metres Patch Cords	8,500.00
Ten Single Patch Cords	9,500.00
One HU Cord Organizer	3,000.00
One 4RJ45 Fibre Share Mini-Hub	60,816.00
One Fibre Optics Transceiver module +12 Port Hub	125,000.00
Cable termination and testing	50,000.00
Total Networking	776,617.00

18.4 The cost of the software and training will be as follows:

	<u>Software</u>	Cost (Kshs)
i)	<u>HMIS</u>	
	1. Inpatients Billing system	65,000.00
	2. Outpatient Billing system	55,000.00
	3. Pharmacy Inventory & dispensing system	55,000.00
	4. General purpose stocks inventory system	40,000.00
	5. Debtors ledger	35,000.00
	6. Supplies ledger	55,000.00
	7. General ledger	55,000.00
	8. Cash book	35,000.00
	9. Payroll	55,000.00
	10. Implementation & training	180,000.00
	Total HMIS	630,000.00
ii)	<u>CCL- CHIPS</u>	
	1. Fixed Assets	72,000.00
	2. Implementation & training	20,000.00
	Total CCL-CHIPS	92, 000.00
iii)	<u>MS Office 97 Professional</u>	
	One Time Licence Fees	51,205.00
	Open Licence	

	(Estimated 2 users @ 35,730.00 per user)	71,460.00
	Training – windows NT 2 people @ 20,000/- per person	40,000.00
	MS Word 2 people @ 5,000/- per person	10,000.00
	MS Excel 2 people @ 5,000/- per person	10,000.00
	MS Access 2 people @ 5,000/- per person	10,000.00
	Total MS Office	192,665.00
	TOTAL SOFTWARE & TRAINING	914,665.00
	TOTAL OPTION II COSTS	3,174,282.00

19.0 **THE PREFERRED OPTION**

19.1 Any of the two considered options can satisfy the minimum requirements of Coast Provincial General Hospital. However, HMIS has the following advantages over POS-I-TILL:

- HMIS was developed for hospitals and addresses specific hospital needs. POS-I-TILL was developed for supermarkets and requires customization for it to address the specific needs for hospitals. Customization would mean additional costs to the hospital.
- HMIS was introduced into the market in 1989. Since then, major modifications have been done to conform to changed circumstances as well as keep pace with technological developments both in the information technology as well as in the medical field. POS-I-TILL is relatively new in the market having been introduced in 1998. Little is therefore known of the system in Kenya.
- HMIS is currently being used by six hospitals in Kenya ranging from small to large hospitals. The hospitals contacted expressed their satisfaction with the system. POS-I-TILL is only known at Coast Provincial General Hospital and even here, the only modules being utilised are cash, stocks and debtors. The hospital administration indicated that it would be too early to comment on the system as it was only installed in August 1998.
- HMIS is locally supported with a 24-hour support available on call during implementation. Thereafter, support is made available dependent on the users' level of computer literacy. While POS-I-TILL is locally represented and preliminary support would be provided, the ideal support can only be acquired from the developers in South Africa, which is both time consuming and costly.
- The total costs for adopting HMIS are lower than those of POS-I-TILL.

19.2 It is recommended that Coast Provincial General Hospital should take the HMIS option.