Guidelines for Evaluating the Management Information Systems of Industrial Enterprises

Edilberto L. Segura
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(List continues on the inside back cover)
These guidelines are intended to assist in evaluating the adequacy of the management information systems (MIS) of industrial enterprises. An introduction discusses the objectives of a management information system and suggests how to use the guidelines. The guidelines are divided into five parts corresponding to the five functions of the enterprise: (i) finance and accounting; (ii) human resources; (iii) marketing, distribution and transportation; (iv) operations, including production, materials management and maintenance; and (v) new investments and procurement. For each of these functions, the guidelines will help evaluate the impact on the company's MIS of the business environment and management framework, as well as the adequacy of the company's systems for strategic planning, tactical planning, management control and transaction recording processes. In addition, a section is provided to help quantify the evaluation of the MIS. The assessment of the MIS is intended to identify changes and improvements that may be necessary, but these changes should be carried out only after detailed and careful analysis by specialists. Furthermore, the guidelines are meant to assist Bank staff in evaluating the MIS systems of its potential borrowers, but not intended to establish the World Bank's requirements regarding MIS under its loans and credits. They may, however, prove of use to some enterprise managers in their own internal evaluation processes.
ACKNOWLEDGMENTS

This document is based on a report prepared for the World Bank by Delloite, Haskins and Sells of Ottawa, Canada, under the overall supervision of Edilberto L. Segura. It benefitted from valuable comments and suggestions made by Harinder Kohli, Maurice Mould, Anthony Perram, Anil Sood, Isaac Sam, S. Venkataraman, Christian Duvigneau, Y.T. Shetty, Samir El-Daher, Hideo Aomatsu, Sven Hedgstad, Pierre Larroque, Stanley Greig, Phiroze Medhora, Otto Maiss and other Bank Industry staff. Special thanks are due to Virginia Hitchcock, for her editorial assistance, Avita de la Cruz, for her secretarial assistance, and Muriel Greaves, Eleanor George and Adrianne Johnson, for their word processing assistance.
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INTRODUCTION

1. The guidelines are intended to assist in the evaluation of the adequacy of the management information system (MIS) of industrial enterprises. The assessment will help both outside analysts and the enterprise itself identify any necessary improvements in the system and any further development that may be desirable. It will also help identify organizational adjustments that may be required and staff training needs. Indirectly, it will also help make a preliminary assessment of the efficiency of the management team in the decision-making process of the firm. The guidelines are not a substitute for judgement, initiative and analysis; they provide a framework and checklist to facilitate assessing the adequacy of the MIS. The assessment will also help identify whether a financial institution, such as the World Bank, should participate in the upgrading of the prospective borrower's MIS.

2. The MIS assessment, derived from the use of the guidelines is only intended to identify broadly the extent of changes and improvements that may be required. The actual changes should only be undertaken after a more intense and detailed review by specialized experts. Local conditions may require atypical methods of planning and control, for which there may be no adequate substitutes; they should not be changed without a clear understanding for their existence.

3. The guidelines are comprehensive and general, and therefore they should be used selectively and flexibly. They are mainly relevant for medium and large modern enterprises with over 500 employees. Given that there is a large diversity within industrial enterprises, some sections of the guidelines may not be relevant in specific cases without adaptation to the particular circumstances of the enterprise. The guidelines are not intended to establish the World Bank's requirements regarding MIS under its loans and credits. 1 /

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1/ The Bank's booklet, "Guidelines for Borrowers on Financial Reporting and Auditing of Projects Financed by the World Bank", describes such Bank's requirements for accounting and reporting standards and practices.
Objectives of a Management Information System

4. For purposes of the guidelines, a MIS can be defined as a system to provide relevant information to the appropriate persons in the enterprise at the right time. The information so provided should help managers at all levels of the organization: (i) plan its activities in the short- and long-term; (ii) organize the tasks necessary for the plan; (iii) monitor the execution of the tasks and activities to compare and control actual results with the plan; and (iv) take any necessary corrective measures or replan the activities. In this way, the MIS helps the enterprise manage its various activities and coordinate the goods and activities of the finance, manpower, marketing, and manufacturing functions, so that the overall enterprise objectives are met.

5. Every enterprise requires some form of MIS, but the degree of sophistication needed depends on such factors as: (i) the business environment and its complexity; (ii) the size of the operation; (iii) the management and organizational structure; (iv) the volume of data to be handled; (v) the extent of data analysis required; and (vi) the response time required from the MIS.

6. In general, a management information system is designed to: (i) collect data; (ii) record and store data; (iii) provide for retrieval of the data; (iv) process the data, and (v) transmit and present relevant information. In the context of a business enterprise, the MIS may comprise a number of sub-systems, each providing a different type of information. Regardless of the concept used to define the boundaries of an MIS, the use of the information may be categorized in terms of the business processes of (i) strategic planning; (ii) tactical planning; (iii) management control; and (iv) transaction recording system.

(i) **Strategic Planning.** This is the management activity of analyzing the external and internal environment of the firm and establishing long-term objectives, policies and plans. It also involves making long-term provisions for the resources needed to attain the enterprise objectives, and formulating the policies that are to govern the acquisition, use and disposition of these resources. These activities set the direction of the firm for a multi-year period of time.

(ii) **Tactical Planning.** This is the activity of short-term and more detailed planning of the activities of the firm consistent with the strategic plan. This activity is usually planned with a one-year horizon, through a detailed Annual Budget.
(iii) **Management Control.** This is the activity of controlling and providing feedback on the day-to-day operations of the organization, and reporting periodic (usually monthly) accomplishments. This is the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives. At the operational level, it focuses on specific operational functions, such as production scheduling and control, inventory management, cash management, etc. At the general management level, actual results are continuously monitored against budgets and plans.

(iv) **Transaction Recording Process.** This process captures and records the day-to-day transactions for inputs and results of the firm, thereby providing the data necessary to facilitate the planning and control functions of the MIS.

7. The above processes are involved in each major function of the enterprise (including finance and accounting, human resources, marketing, operations and new investments), so that information requirements can be placed in the cells of a matrix, as shown in Table 1 on the next page.
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| Short-Term Pricing | Annual Energy Supply Plan | |
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| Market Share Analysis | Long-Term Maintenance Plan | |
| Product Profitability | Short-Term Facilities Plan | |
| Customer Satisfaction | Capital Budgeting | |

| Sales Data Capture | Long-Term Marketing, Distribution & Transportation Planning | Contractor Performance Analysis & Control |
| Product Mix | Long-Term Materials Planning | |
| Data | Long-Term Materials Securing Plan | |
| Sales Office | Long-Term Materials Purchase Plan | |
| Operation Data | Long-Term Maintenance Plan | |
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Use of the Guidelines

8. During the evaluation, using the guidelines, the analyst will attempt to identify the nature of the MIS presently operating within the enterprise, and based on an understanding of the particular circumstances of the firm, draw some conclusions regarding its appropriateness.

9. The guidelines are divided into five parts corresponding to the five functions of the enterprise:

   (1) Finance and Accounting
   (2) Human Resources
   (3) Marketing, Distribution and Transportation
   (4) Operations
      a) Production
      b) Materials Management
      c) Maintenance
   (5) New Investments and Procurement

10. Each one of the above five parts of the guidelines is in turn subdivided into the following three sections:

   1. Diagnostic Questionnaire. To facilitate fact finding in the following areas:

      1.1 Business Environment. Description of the ownership, economic, legal and political characteristics in which the enterprise operates, with emphasis on the factors influencing information needs.

      1.2 Management Framework. Analysis of the goals and objectives of the firm, its organizational structure and the established policies and procedures.

      1.3 Management Information. Review of the management information currently available within the enterprise for strategic and tactical planning, management control, and data management.

   2. Adequacy of Transaction Recording System

   This section provides a checklist to assess the condition and adequacy of the basic elements of the system to record daily transactions for inputs and outputs. If it is concluded that the firm's MIS is in need of significant improvements, this section will give the analyst an indication of the effort that may be required to upgrade the data recording module of the MIS.
3. **Quantification of the Assessment of the MIS**

   This is the evaluation section of the guidelines. Based on the analysis of the previous sections, the analyst will assign a numerical rating to the various aspects of each segment of the MIS. It will highlight the areas of the MIS where priority or more substantial improvements may be needed. The ratings of the individual segments of the MIS can be carried forward to the Summary Evaluation Sheet presented as Table 2 on the next page.

**Assessment Procedure**

11. It is recommended that the assessment takes place in five steps.

   **Step 1. Preparation**

   The analyst should gain as great an understanding as possible of the company under assessment under evaluation on the basis of documentation available prior to the visit to the prospective borrower. He/she should go through the evaluation questionnaire in detail so that he/she will be able to relate the questions to the prospective borrower's particular situation during the subsequent interview process. On arrival at the prospective client's establishment, the analyst should participate in any general briefing meetings or, to arrange a general overview of enterprise.

   **Step 2. Structured Interviews**

   Interviews are structured around the Questionnaire. It is recommended that the interviews be conducted as follows:

   (1) The interviews should be conducted with the heads of the functional areas together with the other key personnel as appropriate. It is recommended that initially the interviewer poses the questions verbatim from the Questionnaire. To assist the person being interviewed in answering, it will sometimes be necessary to explain the questions and to give examples relating the questions to the specific circumstances with which the person being interviewed is familiar. On occasion the analyst will find that the interviewee is more comfortable in describing his situation in his own words rather than answering questions as such. In this case the analyst should use the Questionnaire to direct a more general conversation so that all topic areas are in fact covered.
Table 2. **SUMMARY EVALUATION**

<table>
<thead>
<tr>
<th>MANAGEMENT FRAMEWORK</th>
<th>FINANCE AND ACCOUNTING</th>
<th>HUMAN RESOURCES</th>
<th>MARKETING</th>
<th>PRODUCTION</th>
<th>MATERIALS MANAGEMENT</th>
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(ii) On completion of the Diagnostic Questionnaire, the analyst is advised to conduct the review of the Transaction Recording System with those persons directly responsible for the administration of the various systems and procedures rather than with the senior staff who were interviewed for the Diagnostic Questionnaire. In this way the perspectives of both senior and "first line" management will be obtained.

Step 3. Document Review

Once the interviews have been completed, it is strongly recommended that, in order to enhance his understanding of the company's management environment and information systems, the analyst visits the offices where the administrative procedures described during the interviews are actually carried out. He should view samples of all the major pertinent documents, procedures, controls and reports.

Step 4. Assessment of the Systems

The rankings under Quantification of the Assessment are completed by the analyst. In order to apply the numeric 1-5 rating scale logically and consistently, it is important that the analyst establishes a mental frame of reference. The analyst may ascribe his own descriptions to represent the different values on the scale or, alternatively, he might wish to adopt the following suggestions.

1 - Unsatisfactory system
2 - Just able to meet present minimal needs
3 - Normal requirements satisfied, but with potential for improvements
4 - Above main requirements
5 - Superior system

On completion of the evaluation for each functional area, the evaluation ratings should be summarized on the summary evaluation sheet given in Table 2. In the "overall rating" cells the analyst will enter the subjectively weighted average evaluation for the applicable row or column. In the "function weighting" row the analyst will enter its subjective weight for the importance of each function in relation to the others.

Step 5. Reporting

It is anticipated that the analyst will generally be required to make a preliminary verbal report to the prospective client before mission departure. The evaluation procedure is
designed to provide the analyst with sufficient information on which to provide a full written report on the status of the prospective borrower's management information systems and recommendations as to the necessity for further systems development. The results of the analysis will provide a basis to decide on the improvements required, training needs or organizational adjustments. It will help determine whether the Bank should make a provision under its proposed loan/credit to upgrade the system.
The objective of the Finance and Accounting Segment of a Management Information System is to provide management with relevant and timely information for:

- financial planning and decision making;
- exercising control over financial activities; and
- facilitating the coordination of the financial requirements of the various functions of the enterprise.

Use the accompanying questionnaire given in the first section in gathering relevant information and identifying deficiencies in the finance and accounting segment of the management information system. Complete as much of the questionnaire as possible in advance of the interview. The analyst may be able to answer many questions based on background research on the enterprise and the country. This advance work will relieve the analyst of the need to use time during the interview pursuing these matters.

The second section (Adequacy of Transaction Recording System) can be used to assess the ability of the company to maintain data and record business transactions.

The third section (Quantification of the Assessment) provides a mechanism to quantify the responses obtained in the two earlier sections.
1.1 Diagnostic Questionnaire

1.1.1 Business Environment

Questions 1-12 develop an understanding of the business environment in which the finance and accounting function operates.

(1.1.1.1) Asset and Financial Structure

1. What is the ownership (equity) structure of the enterprise (e.g., publicly traded, private, government, domestic or foreign, number of shareholders)?

2. What are the principal source of non-equity financing (e.g., financial institutions, domestic or foreign, government, suppliers, bonds)?

3. What is the asset structure of the enterprise? How does this compare with the financing structure with respect to terms and maturities?

4. How does the ownership influence the management, including decision making, appointments and policies?

(1.1.1.2) Economic Characteristics

5. To what extent is the financial performance of the firm determined by the domestic economic situation?
6. Does the enterprise experience substantial cyclical variation in sales? What is the source of the variation?

7. Is a large volume of sales represented by trade receivables? Who are the holders of the receivables?

8. Is there a large volume of purchases on credit?

(1.1.1.3) Legal and Political Characteristics

9. Is there a governing professional accounting body? Is there an adequate supply of professionally qualified accountants?

10. What external reporting requirements are imposed on the enterprise by its providers of equity and non-equity financing? What are the legal requirements and regulations for financial reporting (e.g., fiscal year, external audit)?

11. Are there any significant legal or political constraints on the financial activities of the firms such as fund raising and profits distribution?

12. What is the degree of control by Government of prices, and other financial parameters of the company?
1.1.2 Management Framework

Questions 1-14 deal with managerial practices and organization structure that may impact on the effectiveness of the MIS.

(1.1.2.1) Financial Goals and Objectives

1. Does the enterprise establish financial goals and objectives, both long-term and short-term? If so, what are they?

2. Are these financial goals and objectives clearly conveyed to the financial managers and staff?

3. Are the financial performances of the enterprise regularly reviewed according to the established financial goals and objectives?

(1.1.2.2) Organizational Structure

4. Is the management of the company fully autonomous to set and implement financial policies and systems? Is it Government controlled? Are there undue interferences by higher Government authorities?

5. What is the organizational structure of the finance and accounting function? Has this been clearly documented in organization charts and position descriptions?

6. What is the educational and occupational background of finance and accounting personnel?
7. What are the financial managers' major responsibilities and authorities? Are they matched?

8. Does the organizational structure provide for the major financial functions, including programming and budgeting, controllership, and treasury?

9. Is there an internal audit function? Does the internal audit function report to person(s) independent of the accounting function so that objectivity is maintained?

10. How does the finance/accounting function interact with:
   a) Marketing?
   b) Production?
   c) Human Resources?
   d) Product Pricing?

11. What are the significant financial regulations and policies in each of the following areas:
   a) Financial accounting - (e.g., revenue recognition, inventory valuations, fixed assets capitalization, fixed asset revaluation, depreciation and amortization, foreign currency translation, general price level adjustments).
b) Inventory valuation (e.g., FIFO, LIFO).

c) Appropriation of surpluses/treatment of deficits.

d) Cost accounting and inventory control - (e.g., direct vs. full costing, basis for overhead allocations).

e) Budgeting/management accounting (e.g., standard costing, variance analysis, cost, profit or investment centers).

f) Transfer pricing, billing and collections.

g) Operation of bank accounts and payment procedures.

h) Debt management, financial commitment and signing authorities.

i) Risk management (e.g., insurance, foreign exchange positions).

12. Are the financial policies consistent with those used in the industry?
13. Are the financial policies regularly reviewed and revised as required? 

14. Is the company audited by independent external auditors? Were generally accepted accounting principles applied on a consistent basis with previous years? Have external audit reports noted problems that can be attributed to inadequacies of the MIS?

1.1.3 Management Information

Questions 1-33 focus on a basic description of the finance and accounting information system.

(1.1.3.1) Strategic Planning

1. Does the enterprise develop a long-term strategic financial plan? How is it designed to achieve the long-term financial goals and objectives? Does the plan place appropriate emphasis on profit maximization? What period does it cover? How often is it updated?

2. Are the overall financial plans supported by appropriate subsidiary budgets (capital expenditures, operating expenditures, etc.)?

3. What are the basis and methodologies used for the financial forecasts?
4. To what extent does the long-term financial plan cover:

a) Complete pro-forma financial statements (income statement, balance sheets, cash flow)?

b) Desired asset structure?

c) Desired financing structure (debt, equity, self financing, term structure)?

d) Risk management (insurance, foreign exchange exposure)?

e) The impact on finance of other corporate programs, such as capital expenditures, acquisition or divestitures, research and development, market development, etc.?

f) Modification to policies on dividend distributions, corporate credit ranking, risk exposure, etc. required to implement the plan?

5. Who co-ordinates development of the long-term financial plan? Who participates? Who approves? What sources of information are used in its development? How are persons and information outside of finance and accounting involved?

6. Does the long-term financial plan set out for financial managers specific performance variables that can be used for control and evaluation purposes? To what levels in the finance organization are the goals directed?
7. What are the principal sources of information in strategic financial planning:

a) Evolution of industry supply and demand, both internationally and domestically?

b) Evolution of industry product and input prices?

c) Evolution of key financial parameters affecting the company (interest rates, foreign exchange rates, tariffs, etc.)?

d) Evolution of key economic and political conditions affecting the company (GDP growth, domestic and foreign policies in investments, expatriation of profits, taxes, etc.)

8. Is the finance and accounting function making adequate use in its strategic planning of the information compiled by the marketing and operation functions?

(1.1.3.2) Tactical Planning

9. Does the enterprise develop a short-term tactical financial plan? What period does it cover? How often is it updated?
10. To what extent does the short term-financial plan cover:

a) Annual budget?

b) Cash and working capital requirements?

c) Projected quarterly income statements and balance sheet?

d) Relationship to long-term financial plan?

e) Modifications to policies on granting credit, inventory holding, collection of accounts, foreign exchange exposure, borrowing, etc. required to implement the plan?

f) The impact on finance of the activities of other corporate functions, such as marketing, production, etc.?

11. Who co-ordinates development of the short-term financial plan? Who participates? Who approves? What sources of information are used in its development? How are persons and information outside of finance and accounting involved?

12. Does the short-term financial plan set out for financial managers specific performance variables that can be used for control and evaluation purposes? To what levels in the finance organization are the goals directed?
13. What are the major finance and accounting reports received by top management? How frequently are they prepared? To whom are they distributed? ________

14. How is the management reporting system designed to recognize the financial performances against the established goals? Are the financial managers' accountabilities clear in the system? ________

15. Indicate the information available to monitor the enterprise's financial activities:
   a) Profitability (e.g., from operations, other gains and losses) ________
   b) Liquidity and working capital position, (e.g., cash, accounts receivable, inventories, accounts payable, lines of credit outstanding) ________
   c) Solvency and long-term financial position, (e.g., debt and equity outstanding, share prices, bond rating, debt service). ________

16. Is standard costing adopted for controlling costs? Is the cost accounting system capable of providing measures of variances with the standards? Is it integrated with the financial accounting system? ________
17. What performance measures are routinely prepared for management? (Some common measures are listed below, but this list is not exhaustive). How frequently are they prepared? Are they prepared by product line or location, where applicable?

Return on capital employed = \( \frac{\text{Profit before interest & tax}}{\text{Fixed assets & net working capital}} \)

Profit margin = \( \frac{\text{Profit before interest & tax}}{\text{Sales}} \)

Annual turnover of capital employed = \( \frac{\text{Sales}}{\text{Fixed assets & net working capital}} \)

Current ratio = \( \frac{\text{Current assets}}{\text{Current liabilities}} \)

Collection period = \( \frac{\text{Accounts receivable}}{\text{Average daily sales}} \)

Inventory turnover = \( \frac{\text{Cost of sales}}{\text{Inventories}} \)

Fixed charge coverage = \( \frac{\text{Profit before interest, leasePayments and taxes}}{\text{Interest and lease payments}} \)

Total debt service coverage = \( \frac{\text{Depreciation plus profits before interest, lease payments and taxes}}{\text{Interest, lease and principal payments}} \)

Long-term debt/equity ratio = \( \frac{\text{Long term debt outstanding}}{\text{Long term debt plus equity}} \)
18. What is the system used to control actual performance vis-a-vis annual budgets and long-term plans?

19. Can the management accounting system accommodate physical or non-financial units e.g., tons of output, hours, incidents, etc? Can the system produce unit costs or performance indices?

20. How is the financial accounting system integrated or reconciled with the management accounting system? Comment:

21. What is the system to administer the debt service?

22. Have internal audit reports noted any problems that can be attributed to MIS deficiencies?

23. To what extent has the company succeeded in creating a control environment in which the staff is committed and motivated to comply with prescribed controls?

24. Is there a satisfactory division of responsibilities between those who approve budgets, approve expenditures under the budget, make payments from cash reserves, and keep the assets, records and books? If not, are there devices such as requiring two signatures?
(1.1.3.4) Data Management

Pose the following questions initially to the executive responsible for finance and accounting; depending on the organizational arrangements it may be necessary to refer some questions to a data processing executive.

25. What are the principal files and records of finance and accounting information (transactions/operating and reference) maintained by the enterprise? On what storage media are they maintained?

26. What are the enterprise policies on retention of finance and accounting records?

27. What filing system is used to provide access to information in files and records and to provide linkages between records?

28. Where are the files and records physically stored? What are the physical storage arrangements?

29. How are the operating units able to access information from files and records that are not under their control? How is the information transmitted?
30. Does the enterprise maintain a data base from which it can develop financial analysis as the need for such analyses are identified? Explain: 

__________________________

31. If computerized data processing is used, does the enterprise operate its own facility or does it use a service bureau? How satisfactory is it? 

__________________________

32. What systems are presently computerized in the finance MIS management? 

__________________________

33. Is there an in-house systems design capability? How are users involved in the design of MIS applications? 

__________________________

(1.1.3.5) Overall Management Views on the MIS Segment

34. Do you consider that the finance MIS provides the financial information the company needs for planning, decision making and control? 

__________________________

35. What do you think would be the most helpful improvements that could be made in the financial segment of the present MIS? 

__________________________

36. Is there a long-term plan for MIS development projects? If so, how are projects identified and prioritized? 

__________________________

1. Finance and Accounting 15
1.1 Questionnaire
2.2 Adequacy of Transaction Recording System

This section is to be completed by the analyst only after viewing the pertinent procedures and documents.

Time permitting, supplement your answers to the following questions with a description of the relevant systems, procedures or records, as appropriate.

Yes  No

1. Does the enterprise maintain an accounting system which includes the following characteristics:

   a) A system of double entry bookkeeping?  
     b) Accrual basis of accounting?  
     c) A chart of accounts which includes all elements of the financial statements?  
     d) Controls in place to ensure that initial source documents are complete, accurate and valid?  
     e) Controls in place to ensure that source documents are initially recorded, summarized and posted to ledgers on a timely basis?  
     f) Books of original entry maintained in such a manner that each transaction can be identified and referenced to the applicable source documents which support the entry in the accounts?  
     g) General ledger posting sources identifiable (e.g., journal name, page, date, entry number)?  
     h) The accounts transactions affecting several accounts identified and recorded? The basis of allocation identified?  
     i) Records by cost, responsibility, and profit or investment centers maintained?
2. Does the enterprise maintain some form of cash receipts and disbursement system that include the following:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Controls and records to ensure the completeness, accuracy, validity and timeliness of initial recording of cash receipts and disbursements?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Periodic reconciliation of general ledger control accounts to bank statements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Periodic cash counts (e.g., petty cash?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Checks to ensure recorded transactions receive proper treatment in the accounts?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Controls to ensure that each transaction is supported by appropriate supporting documentation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Identification of exchange rates in effect both at the date of purchase or sale and at the date of settlement of the related accounts payable or receivable?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Does the enterprise maintain some form of accounts receivable and sales system which includes the following:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Controls and records to ensure the completeness, accuracy, validity and timeliness of recording of credit sales and customer payments?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Periodic reconciliation of the accounts receivable sub-ledger to the general ledger control account?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Information on the timing of sales to facilitate preparation of an accounts receivable aged listing?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Procedures in place to ensure proper recording and authorization of bad debt write offs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Controls to ensure that only credit worthy customers are approved for credit sales and that credit limits are not exceeded?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Does the enterprise maintain some form of accounts payable and purchase system which included the following:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Controls and records to ensure the completeness, accuracy validity and timeliness of recording of purchases and payments to suppliers?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
b) Controls to ensure that purchase requisitions are matched to receiving reports and are properly authorized for payment? 

[Yes] [No] 

C) Periodic reconciliation of the accounts payable sub-ledger to the general ledger control account? 

[Yes] [No] 

d) Controls to ensure that disbursements to creditors are valid and supported by appropriately authorized documents? 

[Yes] [No] 

5. Does the enterprise maintain some form of inventory system which includes the following features:

a) Controls and records to ensure the completeness, accuracy validity and timeliness of recording of inventory? receipts and issues? 

[Yes] [No] 

b) Periodic reconciliation of records to physical quantities and follow up of discrepancies? 

[Yes] [No] 

c) Information available on the timing of receipts and issues from inventory both by product and location? 

[Yes] [No] 

6. Does the enterprise maintain some form of fixed assets system which includes the following features:

a) Controls and records to ensure the completeness, accuracy validity and timeliness of fixed assets acquisition, disposals and depreciation charges? 

[Yes] [No] 

b) Controls to ensure proper authorization of acquisitions, disposals and depreciation rates? 

[Yes] [No] 

c) Maintenance of fixed asset files containing information such as: identification number, cost, specifications or rated capacity, expected life, maintenance procedures, depreciation rate, service history, condition, existence of warrantees or service contracts, and revaluations or appraisals? 

[Yes] [No] 

d) Maintenance of leased asset files containing information such as: identification number, specifications or rated capacity, lease term, lease payments, explicit interest rates, residuals values, purchase options, maintenance procedures) service history and condition? 

[Yes] [No] 

e) Periodic reconciliation of fixed asset sub-ledger to general ledger control accounts? 

[Yes] [No]
7. Does the enterprise maintain a cost accounting system having the following feature:

   a) A chart of accounts that facilitate recording and reporting of information by:
      - responsibility centre (e.g., cost centre, profit, centre, or investment centre)
      - element (e.g., labour, materials, depreciation, etc.)
      - behaviour (e.g., fixed or variable, controllable or non-controllable)?

   b) Appropriately defined basis for allocations of costs in the accounts (e.g., direct labour hours, capital employed, units of production)?

   c) Controls to ensure that allocations to the accounts are complete, accurate and valid.
      - authorization of entries
      - reconciliations (e.g., payroll disbursements to total labour expense, depreciation charges to total depreciation expense)?

---

1. Finance and Accounting
1.2 Transaction Recording System
1.3 Quantification of Assessment of the Segment

The following evaluations are intended to direct the analyst in the interpretation of responses obtained from questions contained in 1.1 - Diagnostic Questionnaire.

Each evaluation provides a 5-point scale on which the analyst's rating is to be recorded.

Low 1 2 3 4 5 High

Evaluations 1-5 deal with individual aspects of the finance and accounting MIS. Evaluation 6 asks for an evaluation of the finance and accounting MIS as a whole. Evaluation 7 covers the importance of the finance and accounting MIS to the enterprise as a whole.

Note that no weighting of the significance of Evaluations 1-5 is given. This means that in completing Evaluation 6 the analyst must provide his/her own subjective weighting of the individual aspects based on the analyst's perception of the environment and requirements of the enterprise.

1. Management Framework

i) Management by objective (questions 1-3 in 1.1.2.1)

1 2 3 4 5

Comments: ____________________________________________________________

ii) Adequacy of organizational structure and setup (questions 4-10 in 1.1.2.2)

1 2 3 4 5

Comments: ____________________________________________________________
iii) Adequacy of financial and accounting policies and procedures (questions 11-14 in 1.1.2.3)  

1 2 3 4 5  

Comments:  


OVERALL 1 2 3 4 5  

Comments:  


2. Strategic Planning  

i) Adequacy of the long-term financial planning system (questions 1-6 in 1.1.3.1)  

1 2 3 4 5  

Comments:  


ii) Adequacy of planning information (questions 7-8 in 1.1.3.1)  

1 2 3 4 5  

Comments:  


OVERALL 1 2 3 4 5  

Comments:  


1. Finance and Accounting  
1.3 Quantification of the Assessment
3. **Tactical Planning**

Adequacy of the short-term financial planning system (questions 9-12 in 1.1.3.2)

1 2 3 4 5

Comments: 


4. **Management Control**

Adequacy of control information and control system (questions 13-24 in 1.1.3.3)

1 2 3 4 5

Comments: 


5. **Data Management**

Adequacy of data base and its management (questions 25-33 in 1.1.3.4 and Section 1.2)

1 2 3 4 5

Comments: 


6. **Overall Rating**

Based on the ratings in Evaluations 1-5 above, provide a summary rating of the financial MIS.

1 2 3 4 5

Comments: 


---

22 1. Finance and Accounting 1.3 Quantification of the Assessment
7. Function Weighting

What is the importance of the financial MIS to the enterprise compared with other functions' MIS?

1 2 3 4 5

Comments: ________________________________________________________________

__________________________________________________________________________

1. Finance and Accounting
1.3 Quantification of the Assessment
2. HUMAN RESOURCES

The objective of the Human Resources Segment of a Management Information Systems is to provide management with relevant, timely information for:

- planning and decision making with respect to human resources planning;
- exercising control over human resource activities; and
- facilitating effective utilization of human resources to achieve the objectives of the enterprise and the satisfaction and development of the employees.

Use the accompanying questionnaire given in the first section in gathering relevant information and identifying deficiencies in the human resources segment of the management information system. Complete as much of the questionnaire as possible in advance of the interview. The analyst may be able to answer many questions based on background research on the enterprise and the country. This advance work will relieve the analyst of the need to use time during the interview pursuing these matters.

The second section (Adequacy of Transaction Recording System) can be used to assess the ability of the company to maintain data and record business transactions.

The third section (Quantification of the Assessment) provides a mechanism to quantify the responses obtained in the two earlier sections.
2.1 Diagnostic Questionnaire

2.1.1 Business Environment

Questions 1–3 develop an understanding of the environment in which the human resources function operates.

(2.1.1.1) Workforce Structure

1. How many people does the enterprise employ? What is the composition of the employee work force (e.g., proportion full-time versus part-time)?

2. Are there seasonal fluctuations in the number of employees? Why?

(2.1.1.2) Economic and Political Characteristics

3. To what extent does the political and economic situation within which the enterprise is situated influence the available labour force (e.g., education, numbers, regulations, expectations, etc.)? Explain:

2.1.2 Management Framework

Questions 1–10 deal with managerial practices and organization structures that may impact on the effectiveness of the MIS.

(2.1.2.1) Goals and Objectives

1. Does the enterprise establish long- and short-term goals and objectives for human resources development? If so, what are they?
2. Are these goals and objectives clearly conveyed to all employees?

3. Is the human resource development progress regularly reviewed according to the established goals and objectives?

(2.1.2.2) Organizational Structure

4. What is the organizational structure of human resources management? Has this been clearly documented in organization charts and position description?

5. What is the educational and occupational background of human resources management personnel?

6. What are the human resources managers' major responsibilities and authorities? Are they matched?

7. How does the human resources management interact with:
   a) The annual budget-setting process?
   b) Long-term financial planning?
   c) Long-term operations planning?
8. What are the significant policies in each of the following areas?
   
a) Recruitment _____________________________
   
   b) Termination _____________________________
   
   c) Career development _______________________
   
   d) Training _________________________________
   
   e) Performance appraisal _____________________
   
   f) Working conditions and environment _________
   
   g) Compensation and benefits _________________
   
   h) Health services ___________________________
   
   i) Grievances _______________________________

9. How are the human resource policies documented? ________________________________

10. Are the human resources policies and procedures regularly reviewed and revised as required?
    ___________________________________________________________________
    ___________________________________________________________________
2.1.3 Management Information

Questions 1-22 focus on a description of the available human resources information system.

(2.1.3.1) **Strategic Planning**

1. Does the enterprise develop a long-term strategic human resources plan?

2. To what extent does the long-term human resources plan cover:
   a) Labour force strategy to accommodate:
      - enterprise expansion?
      - enterprise contraction?
   b) Grade and salary structure?
   c) Employee training and career development?
   d) Recruitment strategies?
   d) Economic and labour forecasts and trend projections?

3. Who coordinates developments of the long-term human resources plan? Who participates? Who approves? What sources of information are used in its development? How are persons and information outside of the human resources function involved?
4. Does the long-term human resources plan set out for human resources managers specific performance variables that can be used for control and evaluation purposes? To what levels in the human resources organizations are the goals directed?

5. What are the principle sources of information for strategic planning:
   a) Labour force trends and projections?
   b) Industry and community trends?

(2.1.3.2) Tactical Planning

6. Does the enterprise develop a short-term tactical human resources plan?

7. To what extent does the short-term human resources cover:
   a) Annual recruiting program?
   b) Annual training program?
   c) Employee evaluation?
   d) Compensation and benefits plan?
Management Control

8. What are the major reports received by top management concerning human resources management? How frequently are they prepared? To whom are they distributed?

9. Does management use any of the following information to monitor the performance of the human resources function of the enterprise:
   a) Staffing (hires, terminations, transfers, promotions)
   b) Absenteeism?
   c) Leave of absence?
   d) Grievances?
   e) Position vacancies?

10. Is control information provided for each major location or organization division?

11. What performance measures are routinely prepared for management? (some common measures are listed below, but this list is not exhaustive). How frequently are they prepared? Are they prepared by product, product line or location, where applicable?
   a) Effectiveness ratios (e.g., units of output to employee hour worked).
   b) Accident ratios (e.g., ratio of lost-time hours due to accidents to number of hours worked by the organization).
c) Industrial relations ratios (e.g., ratio of number of grievances filed to total number of employees).

d) Turnover and absenteeism ratios (e.g., ratio of total quits to the average working force; ratio of voluntary absenteeism to total days worked by the organization).

e) Personnel ratios (e.g., percentage distribution of employees by classification).

12. What training and career development schemes are there? What information is produced for their management and planning? What records are kept on the training needs and achievements of individuals?

13. What personnel appraisal procedures are in place? What information is produced?

14. Is there a job evaluation procedure? How is it related to the control and administration of the enterprise's payment systems?

(2.1.3.4) Data Management

Pose the following questions initially to the executive responsible for human resources; depending on the organizational arrangements it may be necessary to refer some questions to a data processing executive.
15. What are the principal files and records of human resources information (transactions/operating and reference) maintained by the enterprise? On what storage media are they maintained? 

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

16. What are the enterprise's policies on retention of human resources records? 

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

17. What filing system is used to provide access to information in files and records and to provide linkages between records? 

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

18. Where are the files and records physically stored? What are the physical storage arrangements? 

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

19. How are operating units able to access information from files and records that are not under their control? How is the information transmitted? 

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

20. Does the enterprise maintain a data base from which it can develop human resource analyses as the need for such analyses is identified? Explain: 

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________
Overall Management Views on the MIS Segment

21. Do you consider that the MIS provides the human resources information you need for planning, decision making and control?

22. What do you think would be the most helpful improvements that could be made in the human resources segment of the present MIS?
2.2 Adequacy of Transaction Recording System

This section is to be completed by the analyst only after viewing the pertinent procedures and documents.

Time permitting, supplement your answers to the following questions with a description of the relevant systems, procedures or records, as appropriate.

1. Does the enterprise maintain some form of employee information system that includes the following features:

   a) Application/resume, interview notes?
   b) Medical history and records?
   c) Employee-related correspondence?
   d) Time sheets (hours worked, rate of pay shifts worked, overtime)?
   e) Attendance records (sick time, vacation, overtime, pay increments)?
   f) Employment history (promotions, demotions, transfers, grievances)?

2. Does the enterprise maintain some form of monitoring system that includes the following features:

   a) Checks to ensure pay levels are correct?
   b) Controls to monitor leave and absenteeism?
   c) Checks to ensure pay increases/decreases and promotions/demotions are valid?
   d) Checks to ensure contracts, agreements and government regulations are adhered to?
   e) Reviews of job descriptions and policies and procedures are conducted regularly?
2.3 Quantification of the Assessment of the Segment

The following evaluations are intended to direct the analyst in the interpretation of responses obtained from questions contained in 2.1 - Diagnostic Questionnaire.

Each evaluation provides a 5-point scale on which is to be recorded the analyst's rating.

Low 1 2 3 4 5 High

Evaluations 1-5 deal with individual aspects of human resources MIS. Evaluation 6 asks for an evaluation of the human resources MIS as a whole. Evaluation 7 covers the importance of the human resources MIS to the enterprise as a whole.

Note that no weighting of the significance of Evaluations 1-5 is given. This means that in completing Evaluation 6 the analyst must provide his/her own subjective weighting of the individual aspects based on the analyst's perception of the environment and requirements of the enterprise.

1. Management Framework

i) Management by objective (questions 1-3 in 2.1.2.1)

1 2 3 4 5

Comments: ____________________________________________________________

ii) Adequacy of organizational structure (questions 4-7 in 2.1.2.2)

1 2 3 4 5

Comments: ____________________________________________________________

2. Human Resources

2.3 Quantification of the Assessment
iii) Adequacy of human resources policies (questions 8-10 in 2.1.2.3)

1 2 3 4 5

Comments: ________________________________________________________________

OVERALL 1 2 3 4 5

Comments: ________________________________________________________________

2. Strategic Planning

i) Adequacy of the long-term human resources planning system (questions 1-4 in 2.1.3.1)

1 2 3 4 5

Comments: ________________________________________________________________

ii) Adequacy of planning information (question 5 in 2.1.3.1)

Comments: ________________________________________________________________

OVERALL 1 2 3 4 5

Comments: ________________________________________________________________

3. Tactical Planning

Adequacy of the short-term human resources planning system (questions 6-7 in 2.1.3.2)

1 2 3 4 5

Comments: ________________________________________________________________

2. Human Resources
2.3 Quantification of the Assessment
4. **Management Control**

Adequacy of control information and control system (questions 8-14 in 2.1.3.3)

1 2 3 4 5

Comments: ____________________________________________________________________
______________________________________________________________________________

5. **Data Management**

Adequacy of data base and its management (questions 15-20 in 2.1.3.4 and Section 2.2)

1 2 3 4 5

Comments: ____________________________________________________________________
______________________________________________________________________________

6. **Overall Rating**

Based on the ratings in 1-5 above, provide a summary rating of the human resources MIS.

1 2 3 4 5

Comments: ____________________________________________________________________
______________________________________________________________________________

7. **Function Weighting**

What is the importance of the human resources MIS to the enterprise compared with other functions' MIS?

1 2 3 4 5

Comments: ____________________________________________________________________
______________________________________________________________________________

---

2. Human Resources
2.3 Quantification of the Assessment
The objective of the Marketing Segment of a Management Information System is to provide management with relevant, timely information for:

- planning and decision making with respect to products offered, markets covered, sales management, pricing, distribution systems and promotional efforts;
- exercising control over sales and marketing activities; and
- facilitating the coordination of the various functions of the enterprise in meeting the demands of the market place.

Use the accompanying questionnaire given in the first section in gathering relevant information and identifying deficiencies in the marketing segment of the management information system. Complete as much of the questionnaire as possible in advance of the interview. The analyst may be able to answer many questions based on background research on the enterprise and the country. This advance work will relieve the analyst of the need to use time during the interview pursuing these matters.

The second section (Adequacy of Transaction Recording System) can be used to assess the ability of the company to maintain data and record business transactions.

The third section (Quantification of the Assessment) provides a mechanism to quantify the responses obtained in the two earlier sections.
3.1 Diagnostic Questionnaire

3.1.1 Business Environment

Questions 1-14 develop an understanding of the environment in which the marketing function operates.

(3.1.1.1) Market Segmentation

1. What products does the enterprise offer? 

2. What are the characteristics of the customers for each of the products offered by the enterprise (e.g., institutional customers, knowledge about the product)? 

3. What geographical markets does the enterprise serve? What products are offered in each? 

4. What is the share of the company in the various markets, including regionally, nationally, and internationally? 

5. What is the degree of spread or concentration of the submarkets of the company? 

(3.1.1.2) Marketing, Distribution and Transportation System

6. What are the nature and location of production and distribution centres? What volumes do they handle? What are their capacities?
7. What systems of transportation are used to link the production centres, distribution centres, and markets? What are their capacities? What volumes do they handle?

8. Where are the marketing and sales forces located?

9. Does the enterprise employ agents or its own personnel in the marketing and distribution system?

(3.1.1.3) Competitive Characteristics

10. What is the competitive structure of the markets served by the enterprise (e.g., number of competitors, relative market shares)?

11. What is the market share of the company compared to those of its main competitor?

12. What are the normal terms of sale for each of the enterprise's products (e.g., cash, credit, long-term contract)? How is price used as a competitive weapon?
13. To what extent is product innovation typical of the industry in which the enterprise operates? What is the future market potential for existing products? What new products or product improvements are being developed? ______________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

14. Does the government in any way influence the selection of products offered, quantities offered or markets served (e.g., marketing assistance, customer financing, investment or tax incentives)? ______________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

3.1.2 Management Framework

Questions 1-11 deal with managerial practices and organization structures that may impact on the effectiveness of the MIS.

(3.1.2.1) Goals and Objectives

1. Does the enterprise establish long- and short-term goals and objectives for marketing and distribution? If so, what are they? ______________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

2. Are these goals and objectives clearly conveyed to the relevant managers and staff? ______________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

3. Are the marketing and distribution performances regularly reviewed according to the established goals and objectives? ______________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
Organizational Structure

4. What is the organization structure of the marketing, distribution and transportation function? Has this been clearly documented in organization charts and position descriptions? (Attach copies of organization charts).

5. What is the educational and occupational background of personnel in marketing, distribution and transportation?

6. What is the role of marketing vis-a-vis production and finance functions in determining:
   a) Product mix?
   b) Target markets?
   c) New product/market development?
   d) Location of distribution centres?
   e) Selection of distributors?
   f) Production volumes and schedules?
   g) Finished goods inventory levels?
   h) Pricing and credit terms?
   i) Marketing budget levels?

7. What are the marketing, distribution, and transportation managers' major responsibilities and authorities? Are they matched?

Policies

8. What are the significant policies in each of the following areas:
   a) Products and market segments?
b) Customer service?

c) Pricing, credit and delivery?

d) Selling, promotion and advertising?

e) Distribution: transportation and storage?

f) Distribution: agent and dealer relationships?

g) Finished goods inventory?

9. Do the marketing policies reflect an awareness of the customer's demands for product quality, service and value?

10. Are the marketing policies consistent with the enterprise's competitive position in the market?

11. Are the marketing policies regularly reviewed and revised as required?

3.1.3 Management Information

Questions 1-25 focus on a basic description of the available marketing information.
(3.1.3.1) **Strategic Planning**

1. Does the enterprise develop a long-term strategic marketing and distribution plan? What period does it cover? How often is it updated? ________________

2. To what extent does the long-term marketing plan cover:
   a) Supply and demand balance?
   b) Product and market development?
   c) Long-term pricing strategy?
   d) Customer analysis?
   e) Type and level of advertising and promotional activities?
   f) Sales force management?
   g) New product development?
   h) Nature, location and development of distribution facilities:
      i) company-owned and operated?
      ii) agents and dealers?
   i) Contract planning?
   j) Linkages with the finance, production and human resources plans? ________________

3. How are the research and development (R&D) activities organized? Is there a sufficient interface between marketing and production sides? Is the R&D more for new products development or for product improvement? ________________
4. Who coordinates development of the long-term marketing and distribution plan? Who approves? How are persons and information outside of marketing and distribution involved? 

5. Does the long-term marketing and distribution plan set out for managers specific performance variables that can be used for control and evaluation purposes? To what level in the marketing and distribution organization are the goals directed? 

6. What are the principal sources of information for strategic planning:
   a) Market potential (e.g., worldwide prospects for demand and supply)? 
   b) Enterprise product sales potential? 
   c) Customer characteristics and preferences? (e.g., product features; prices, credit, delivery; advice and after-sales service)? 
   d) Competitor characteristics and behaviour (e.g., products, markets prices)? 
   e) New product developments 
   f) Economic and political conditions affecting the enterprise, its customers and its competitors (e.g., domestic policies of a customer-nation impacting on demand and, indirectly, price)?
g) Technological developments affecting the production or use of the enterprise's product?

7. What input does the R&D organization provide to the strategic marketing planning?

8. Where applicable, is planning information prepared for each geographical region and product market served by the enterprise?

(3.1.3.2) Tactical Planning

9. Does the enterprise develop a short-term tactical marketing and distribution plan? What period does it cover (e.g. quarterly, monthly, weekly)? How often is it updated?

10. To what extent does the short-term marketing plan cover:
   a) Sales forecasting and plans?
   b) Short-term pricing?
   c) Customer service standards?
   d) Storage standards?
   e) Shipping plans?
11. Who coordinates development of the short-term marketing and distribution plan? Who approves? How are persons and information outside of marketing and distribution involved?

12. Does the short-term marketing and distribution plan set out for managers specific performance variables that can be used for control and evaluation purposes?

(3.1.3.3) Management Control

13. What are the major reports received by top management concerning marketing, distribution and transportation? How frequently are they prepared? To whom are they distributed?

14. What performance measures are routinely prepared for management? (Some common measures are listed below, but this list is not exhaustive). How frequently are they prepared? Are they prepared by product, product line or location, where applicable?

a) Sales volume (e.g., quantities and dollars by product and market)?

b) Market share (e.g., by product and market)?

c) Product profitability (e.g., revenue, cost of goods sold, and selling costs by unit and in total)?

d) Contract variance (e.g., volume and price)?

e) Sales expense (e.g., actual vs. budget)?
f) Customer satisfaction (e.g., returns, complaints, special studies)?

15. Indicate the information available to monitor the enterprise's marketing and distribution activities (include information relating to contracted activities):

a) Sales (e.g., achievement of sales quotas, selling expenses)

b) Advertising and promotion (e.g., customer awareness and interest, advertising and promotion expenses)

c) Warehousing (e.g., stock levels, stock mix, turnover, space utilization, warehousing expenses)

d) Transportation (e.g., throughput, fleet and vehicle utilization, operating and maintenance expenses)

16. Is control information available by product or product line, market, and is it analyzed over time?
17. Indicate which of the following ratios are routinely prepared for management and with what frequency (by product, product line, or location where applicable):

a) Percentage change in sales volume; ____________

b) Profit returns to sales ______________

c) Sales and distribution expenses to sales. _____

(d) Number of month's sales in finished goods inventory; ____________

(3.1.3.4) Data Management

Pose the following questions initially to the executive responsible for marketing; depending on the organizational arrangements it may be necessary to refer some questions to a data processing executive.

18. What are the principal files and records of marketing information (transactions/operating and reference) maintained by the enterprise? On what storage media are they maintained? ______________

19. What are the enterprise's policies on retention of marketing records? ______________

20. What filing system is used to provide access to information in files and records and to provide linkages between records? ______________
21. Where are the files and records physically stored? What are the physical storage arrangements? 

22. How are operating units able to access information from files and records that are not under their control? How is the information transmitted? 

23. Does the enterprise data base facilitate development of marketing analyses as the need for such analyses is identified? 

Explain: 

(3.1.3.5) Overall Management Views on the MIS Segment 

24. Do you consider that the MIS provides the marketing information you need for planning, decision making and control? 

25. What do you think would be the most helpful improvements that could be made in the marketing segment of the present MIS?
3.2 Adequacy of Transaction Recording System

This section is to be completed by the analyst after viewing the pertinent procedures and documents.

Time permitting, supplement your answers to the following questions with a description of the relevant systems, procedures or records, as appropriate.

1. Does the enterprise maintain some form of order entry system that includes the following features:
   a) Controls to ensure that orders are not misplaced? Yes No
   b) Checks to ensure that orders are completed and valid (e.g., product, customer)?
   c) Customer credit checks?
   d) Managerial review of orders rejected (as per b and c) for possible corrective action?
   e) Forward accepted orders to the finished goods inventory system?

2. Does the enterprise maintain some form of finished goods inventory system that includes the following features:
   a) Accepts orders from the order entry system, fills those orders for which goods are available and retains as backorders those orders for which goods are not available?
   b) Accepts receipts of goods and fills backorders
   c) Creates a billing file for orders and backorders filled and forwards to the billing systems?
   d) Updates the physical inventory record for receipts and issues?
   e) Where inventory levels fall below the reorder point, creates a production requirements file and forwards to the production scheduling systems
3.3 Quantification of the Assessment of the Segment

The following evaluations are intended to direct the analyst in the interpretation of responses obtained from questions contained in 3.1 - Diagnostic Questionnaire.

Each evaluation provides a 5-point scale on which is to be recorded the analyst's rating.

Low 1 2 3 4 5 High

Evaluations 1-5 deal with individual aspects of the marketing MIS. Evaluation 6 asks for an evaluation of the marketing MIS as a whole. Evaluation 7 covers the importance of the marketing MIS to the enterprise as a whole.

Note that no weighting of the significance of Evaluations 1-5 is given. This means that in completing Evaluation 6 the analyst must provide his/her own subjective weighting of the individual aspects based on the analyst's perception of the environment and requirements of the enterprise.

1. Management Framework

i) Management by objective (questions 1-3 in 3.1.2.1)

1 2 3 4 5

Comments: __________________________________________
____________________________________________________

ii) Adequacy of organizational structure (questions 4-7 in 3.1.2.2)

1 2 3 4 5

Comments: __________________________________________
____________________________________________________

3. Marketing, Distribution and Transportation

3.3 Quantification of the Assessment
iii) Adequacy of marketing and distribution policies
(questions 8-11 in 3.1.2.3)

| 1 | 2 | 3 | 4 | 5 |

Comments: ____________________________________________________________

OVERALL | 1 | 2 | 3 | 4 | 5 |

Comments: ____________________________________________________________

2. Strategic Planning

i) Adequacy of the long-term marketing and distribution planning system
(questions 1-5 in 3.1.3.1)

| 1 | 2 | 3 | 4 | 5 |

Comments: ____________________________________________________________

ii) Adequacy of information for strategic planning
(questions 6-7 in 3.1.3.1)

| 1 | 2 | 3 | 4 | 5 |

Comments: ____________________________________________________________

OVERALL | 1 | 2 | 3 | 4 | 5 |

Comments: ____________________________________________________________

54 3. Marketing, Distribution and Transportation
3.3 Quantification of the Assessment
3. Tactical Planning
Adequacy of the short-term marketing and distribution planning system (questions 9-12 in 3.1.3.2)
1 2 3 4 5
Comments: ____________________________________________________________
____________________________________________________________________

4. Management Control
Adequacy of control information and control system (questions 13-17 in 3.1.3.3)
1 2 3 4 5
Comments: ____________________________________________________________
____________________________________________________________________

5. Data Management
Adequacy of data management (questions 18-23 in 3.1.3.4 and Section 3.2)
1 2 3 4 5
Comments: ____________________________________________________________
____________________________________________________________________

6. Overall Rating
Based on the ratings in 1-5 above provide a summary rating of the marketing MIS.
1 2 3 4 5
Comments: ____________________________________________________________
____________________________________________________________________
7. **Function Weighting**

What is the importance of the marketing and distribution MIS to the enterprise compared with other functions' MIS?

1 2 3 4 5

Comments: _____________________________________________

________________________________________________________

________________________________________________________
4. OPERATIONS

A. Production

The objective of the Production Segment of a Management Information System is to provide management with relevant, timely information for:

- designing, planning and maintaining of an efficient production system;
- exercising control over production activities; and
- facilitating the coordination of the production function with related functions to ensure that the enterprise as a whole is able to respond to the demands of the market place.

Use the accompanying questionnaire given in the first section in gathering relevant information and identifying deficiencies in the production segment of the management information system. Complete as much of the questionnaire as possible in advance of the interview. The analyst may be able to answer many questions based on background research on the enterprise and the country. This advance work will relieve the analyst of the need to use time during the interview pursuing these matters.

The second section (Adequacy of Transaction Recording System) can be used to assess the ability of the company to maintain data and record business transactions.

The third section (Quantification of the Assessment) provides a mechanism to quantify the responses obtained in the two earlier sections.
4A.1 Diagnostic Questionnaire

4A.1.1 Business Environment

Questions 1-7 develop an understanding of the environment in which the production function operates.

(4A.1.1.1) Production Characteristics

1. Where are the enterprise's production centres located? ____________________________ ____________________________________________________________________________

2. What is the nature of the production processes employed? ____________________________ ____________________________________________________________________________

3. Is the production process or the materials used in it hazardous? ____________________________ ____________________________________________________________________________

4. Are the working conditions associated with the process, plant or equipment unpleasant, difficult or dangerous? ____________________________ ____________________________________________________________________________

5. Are there seasonal or other patterns of demand for the enterprise's products which will affect the seasonal pattern of production? ____________________________ ____________________________________________________________________________

(4A.1.1.2) Legal and Political Characteristics

6. Are there Government regulations on product specifications and standards? ____________________________ ____________________________________________________________________________

7. Are there production quota or targets set by Government? ____________________________ ____________________________________________________________________________
4A.1.2 Management Framework

Questions 1-10 deal with managerial practices and organization structures that may impact on the effectiveness of the MIS.

(4A.1.2.1) Production Goals and Objectives

1. Does the enterprise establish long- and short-term production goals and objectives? If so, what are they? ______________________ ______________________

2. Are these goals and objectives clearly conveyed to the production managers and staff? ______________________

3. Are the production performances regularly reviewed according to the established goals and objectives? ______________________

(4A.1.2.2) Organizational Structure

4. What is the organizational structure of the enterprise's production function? Has this been clearly documented in organization charts and position descriptions? ______________________

5. What are the production managers' major responsibilities and authorities? Are they matched? ______________________

6. What is the educational and occupational background of the production personnel? ______________________
7. How does the production function interact with functions of:

a) Finance? 

b) Marketing and distribution?

c) Human resources?

d) New investments (projects)?

(4A.1.2.3) Policies

8. Indicate in which of the following areas policies and procedures have been established:

a) Product quality specifications Yes No

b) Materials quality specifications Yes No

c) Equipment specifications? Yes No

d) Machine loading procedures? Yes No

e) Quality control, inspection and testing plan? Yes No

f) Engineered production standards? Yes No

9. Are the policies and procedures referred to above reviewed and revised as required and distributed or communicated to appropriate personnel?
10. Are production policies and procedures that impact on product quality and production efficiency supportive of the enterprise's strategic and operational goals?

4A.1.3 Management Information

Questions 1-21 focus on a basic description of the available production information.

(4A.1.3.1) Strategic Planning

1. Does the enterprise develop a long-term production plan? What period is covered? How often is it updated?

2. To what extent does the long-term production plan cover the relationships of production to:
   a) Long-term sales forecasts?
   b) Inventory requirements?
   c) Manpower, materials and energy requirements?
   d) Facilities, machinery and equipment requirements?
   e) Research and development?
3. What input does the research and development organization provide to the strategic production planning?

4. Who coordinates development of the long-term production plan? Who approves? What sources of information are used in their development? How are persons outside of production involved?

5. Does the long-term production plan set out for production managers specific performance variables that can be used for control and evaluation purposes? To what levels in the production organization are the goals directed?

(4A.1.3.2) Tactical Planning

6. Does the enterprise develop an annual production plan? What period is covered (quarterly, monthly, weekly)? How often is it updated?
7. To what extent does the annual production plan cover and incorporate:
   a) Sales forecast? 
   b) Production lead times and cycle times? 
   c) Inventory requirements? 
   d) Manpower and materials requirements? 
   e) Customer demand and delivery requirements? 
   f) Production capacity constraints? 

8. Who coordinates development of the annual production plan? Who approves? How are persons outside of production involved? 

9. Does the annual production plan set out for production managers specific performance variables that can be used for control and evaluation purposes? 

4A. Operations - Production
4A.1 Questionnaire
10. What are the major reports received by top management concerning production? How frequently are they prepared? To whom are they distributed?

11. Indicate the information available to monitor the enterprise's production activities:

a) On-schedule performance (e.g., amount of work behind schedule, aging of work behind schedule, percentage of schedules met, percentage of on-time shipments).


c) Operating efficiency (e.g., consumption of materials, energy and labour in relation to production volumes, scrap and spoilage, machinery and equipment utilization, product quality and rework).

d) Plant safety (e.g., number and nature of accidents, number and nature of injuries, lost time due to accidents).

e) Environmental impact of the plant (e.g., level of emissions, etc.)
12. What performance measures are routinely prepared for management? (Some common measures are listed below, but this list is not exhaustive). How frequently are they prepared? Are they prepared by product, product line or location, where applicable?

a) Gross profit percentage
b) Value of output per employee
c) Capacity utilization
d) Value of output per dollar of wages
e) Material yield
f) Output per hour
g) Production cost per hour

13. Are there periodic reviews of the research and development program and projects? Explain:

14. Data Management

Pose the following questions initially to the executive responsible for operations; depending on the organizational arrangements it may be necessary to refer some questions to a data processing executive.

15. What are the enterprise's policies on retention of production records?
16. What filing system is used to provide access to information in files and records and to provide linkages between records?

17. Where are the files and records physically stored? What are the physical storage arrangements?

18. How are operating units able to access information from files and records that are not under their control? How is the information transmitted?

19. Does the company maintain a data base from which it can develop production planning and control analyses as the need for such analyses arises? Explain:

(4A.1.3.5) Overall Management Views on the MIS Segment

20. Do you consider that the production MIS provides the information you need for planning, decision making and control?

21. What do you think would be the most helpful improvements that could be made in the production MIS?
4A.2 Adequacy of Transaction Recording System

This section is to be completed by the analyst only after viewing the pertinent procedures and documents.

Time permitting, supplement your answers to the following questions with a description of the relevant systems, procedures or records, as appropriate.

1. Process Industries

The concept of transactions and activity level recording system has limited applicability in industries where control is achieved through instrumentation and technological features of the process (e.g., chemicals processing). Normally information will be ready available on:

a) Consumption of raw materials
b) Rates of process flow
c) Issues of finished product to inventory
d) Spoilage
e) Incidents (e.g., breakdowns, accidents.

2. Manufacturing Industries

Are there operating systems which:

a) Prepare production orders
b) Prepare job packets (e.g., specifications, work routing, instructions on methods and machine set-up, materials requisitions, and punched cards or tapes for numerically controlled machines)
c) Record job progress to completion
d) Record issuance of finished goods to inventory
4A.3  Quantification of the Assessment of the Segment

The following evaluations are intended to direct the analyst in the interpretation of responses obtained from questions contained in 4A.1 - Diagnostic Questionnaire.

Each evaluation provides a 5-point scale on which is to be recorded the analyst's rating.

Low 1 2 3 4 5 High

Evaluations 1-5 deal with individual aspects of the Production MIS. Evaluation 6 asks for an evaluation of the Production MIS as a whole. Evaluation 7 covers the importance of the Production MIS to the enterprise as a whole.

Note that no weighting of the significance of Evaluations 1-5 is given. This means that in completing Evaluation 6 the analyst must provide his/her own subjective weighting of the individual aspects based on the analyst's perception of the environment and requirements of the enterprise.

1. Management Framework
   i) Management by objective (questions 1-3 in 4A.1.2.1)
      1 2 3 4 5
      Comments: ____________________________________________
                  ____________________________________________
   ii) Adequacy of organizational structure (questions 4-7 in 4A.1.2.2)
      1 2 3 4 5
      Comments: ____________________________________________
                  ____________________________________________
iii) Adequacy of production policies and procedures (questions 8-10 in 4A.1.2.3)

1 2 3 4 5

Comments: ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
OVERALL 1 2 3 4 5

Comments: ____________________________________________________________
   ____________________________________________________________

2. Strategic Planning

Adequacy of the long-term production planning system (questions 1-5 in 4A.1.3.1)

1 2 3 4 5

Comments: ____________________________________________________________
   ____________________________________________________________

3. Tactical Planning

Adequacy of the annual production plan (questions 6-9 in 4A.1.3.2)

1 2 3 4 5

Comments: ____________________________________________________________
   ____________________________________________________________

4. Management Control

Adequacy of control information and control system (questions 10-12 in 4A.1.3.3)

1 2 3 4 5

Comments: ____________________________________________________________
   ____________________________________________________________

4A. Operations - Production

4A.3 Quantification of the Assessment
5. **Data Management**

Adequacy of data management (questions 14-19 in 4A.1.3.4 and Section 4A.2)

1 2 3 4 5

Comments: 

6. **Overall Rating**

Based on the ratings in 1-5 above, provide a summary rating of the production MIS.

1 2 3 4 5

Comments: 

7. **Function Weighting**

What is the importance of the production MIS to the enterprise compared with other functions' MIS?

1 2 3 4 5

Comments: 


4. OPERATIONS

B. Materials Management

The objective of the Materials Management Segment of a Management Information System is to provide management with relevant, timely information for:

- planning and decision making for securing materials necessary for production and minimizing material costs with safety stock; and
- exercising control over materials management activities.

Use the accompanying questionnaire given in the first section in gathering relevant information and identifying deficiencies in the materials segment of the management information system. Complete as much of the questionnaire as possible in advance of the interview. The analyst may be able to answer many questions based on background research on the enterprise and the country. This advance work will relieve the analyst of the need to use time during the interview pursuing these matters.

The second section (Adequacy of Transaction Recording System) can be used to assess the ability of the company to maintain data and record business transactions.

The third section (Quantification of the Assessment) provides a mechanism to quantify the responses obtained in the two earlier sections.
4B.1 Diagnostic Questionnaire

4B.1.1 Business Environment

Questions 1-6 develop an understanding of the environment in which the materials management function operates.

(4B.1.1.1) Materials Requirements

1. Is a substantial variety of raw materials required? ____________________________
   ____________________________
   ____________________________

2. Is the cost of raw material a relatively significant portion of the cost of the final product? What percentage? ____________________________
   ____________________________
   ____________________________

(4B.1.1.2) Materials Supplies

3. Is the enterprise geographically remote from the sources of materials? ____________________________
   ____________________________

4. Is the transportation network for materials efficient, timely, reliable? ____________________________
   ____________________________

   ____________________________
   ____________________________

(4B.1.1.3) Economic and Political Characteristics

6. Are there any significant economic or political constraints affecting the enterprise's ability to secure supplies? ____________________________
   ____________________________

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4B.1 Questionnaire
4B.1.2 Management Framework

Questions 1-10 deal with managerial practices and organization structure that may impact on the effectiveness of the material management segment of the MIS.

(4B.1.2.1) Goals and Objectives

1. Does the enterprise establish long- and short-term goals and objectives for materials management? If so, what are they? ________________________________

2. Are these goals and objectives clearly conveyed to materials managers and staff? ________________________________

3. Are the materials procurement performances regularly revised according to the established goals and objectives? ________________________________

(4B.1.2.2) Organizational Structure

4. What is the organizational structure of the material management function? Has this been clearly documented in organization charts and position descriptions? ________________________________

5. What are the materials managers' major responsibilities and authorities? Are they matched? ________________________________

6. What is the educational and occupational background of materials procurement managers and personnel? ________________________________
7. How does the materials management interact with:

a) Finance? ______________________________

b) Production? ______________________________

c) Maintenance? ______________________________

(4B.1.2.3) Policies

8. Indicate in which of the following areas policies have been established:

a) Purchasing
   i) Vendor relations Yes__ No__
   ii) Vendor acceptability (prices; credit and delivery terms) Yes__ No__
   iii) Commitment authorities Yes__ No__
   iv) Pricing, credit and delivery Yes__ No__
   v) Central order processing Yes__ No__
   vi) Security of supply Yes__ No__
   vii) Purchasing procedures Yes__ No__

(b) Inventory
   i) Material requirements planning Yes__ No__
   ii) Storage location Yes__ No__
   iii) Investment in inventory Yes__ No__
   iv) Service levels Yes__ No__
   v) Mix and turnover Yes__ No__
   vi) Economic order quantities Yes__ No__
   vii) Re-order points Yes__ No__

9. Do materials management policies reflect an awareness of the enterprise's demands for product quality, service and value? ______________________________

74 4B. Operations - Materials Management
4B.1 Questionnaire
10. Are the materials management policies reviewed and revised as required and distributed or communicated to appropriate personnel?

4B.1.3 Management Information

Questions 1-20 focus on a basic description of the available information for materials management.

(4B.1.3.1) Strategic Planning

1. Does the enterprise develop a long-term materials management plan. What period is covered? How often is it reviewed?

2. To what extent does the long-term materials management cover and incorporate:
   a) Future price and availability?
   b) Technological changes affecting materials requirements?
   c) Nature, location and development of procurement sources
      - company owned and operated?
      - agents and brokers?
   d) Economic and political conditions affecting the enterprise, its suppliers and competitors (e.g., foreign policies of a supplier-nation impacting on supply and, indirectly, price)?
3. Who coordinates development of the long-term materials management plan? Who participates? Who approves? What sources of information are used in its development? How are persons outside of materials management involved?

4. Do the long-term materials management plan set out for materials managers specific performance variables that can be used for control and evaluation purposes? To what levels in the maintenance organization are the goals directed?

5. Where applicable, is planning information prepared for each geographical region and production facility? Explain:

(4B.1.3.2) Tactical Planning

6. Does the enterprise develop a short-term materials procurement plan? What period is covered? How often is it updated?

7. Does the short-term (annual) materials procurement plan reflect production schedules and levels set out in the production plan as well as supplier characteristics (size, dependability, reputation)?


9. Does the short-term materials management plan set out for materials managers specific performance variables that can be used for control and evaluation purposes?
10. What are the major reports received by top management concerning materials management? How frequently are they prepared? To whom are they distributed?

11. Indicate the information available to monitor the enterprise's materials management activities:

   a) Procurement:
      i) Shipment and receipts (dates, partial shipments, back orders, in transit, location, carriers)
      ii) Purchasing variances
      iii) Material cost trends

   b) Inventories:
      i) Warehousing (e.g., stock levels, stock mix, turnover, space utilization, warehousing expense)
      ii) Perpetual records: item description, stock number, location, quantity (supplies, packaging, maintenance parts, raw materials, work in process, finished goods)
      iii) Inventory receipts, issues and adjustments, and amounts committed to production
12. What materials management measures are routinely prepared for management? (Some common measures are listed below, but this list is not exhaustive). How frequently are they prepared? Are they prepared by product, product line or location, where applicable?

a) Ratio of material costs to operating costs
b) Number of days supply in inventory
c) Inventory turnover
d) Fluctuation in inventory levels and minimum inventory level

(4B.1.3.4) Data Management

Pose the following questions initially to the executive responsible for Materials Management; depending on the organizational arrangements it may be necessary to refer some questions to a data processing executive.

13. What are the principal files and records of materials management information (transactions/operating and reference) maintained by the enterprise? On what storage media are they maintained?

14. What are the enterprise's policies on retention of Materials Management records?
15. What filing system is used to provide access information in files and records and to provide linkages between records?

16. Where are the files and records physically stored? What are the physical storage arrangements?

17. How are operating units able to access information from files and records that are not under their control? How is the information transmitted?

18. Does the company maintain a database from which it can develop materials management analyses as the need for such analyses is identified? Explain:

(4B.1.3.5) Overall Management Views on the MIS Segment

19. Do you consider that the materials management MIS provides the information you need for planning, decision making and control?

20. What do you think would be the most helpful improvements that could be made in the materials segment of the present MIS?
4B.2 Adequacy of Transaction Recording System

This section is to be completed by the analyst only after viewing the pertinent procedures and documents.

Time permitting, supplement your answers to the following questions with a description of the relevant systems, procedures or records, as appropriate.

1. Does the enterprise maintain some form of purchase order system that includes the following:
   a) Controls to ensure the validity and completeness of purchase requisitions and purchase orders? __ __
   b) Checks to ensure that purchase orders are only issued to approved suppliers? __ __
   c) Maintenance of open purchase order files? __ __

2. Does the enterprise maintain some form of receiving report system that includes the following features:
   a) Controls to ensure that only requested goods and services are accepted? __ __
   b) Carton counts, comparison with bill of lading, and appearance check of cartons at the receiving dock? __ __
   c) Preparation of a receiving document at the dock for each shipment received and forwards to accounts payable system? __ __
   d) Details of bills of lading agreed to purchase orders __ __
   e) Check to ensure the quality of goods received (e.g., inspection report)? __ __
   f) Discrepancies identified and reported for managerial corrective action? __ __
3. Does the enterprise maintain some form of raw materials and supplies inventory system that includes the following features:

   a) Accepts materials requests, fills those requests for which materials are available and retains as backorders those requests for which materials are not available?

   b) Prompt recording of receipts and issues in physical inventory records?

   c) Quantities and quality of goods received are agreed to original purchase requisition?

   d) Identification and follow-up of unusual time delays in filling orders?

   e) Where inventory levels fall below the reorder point, creates a purchase requisition file?
4B.3  Quantification of the Assessment of the Segment

The following evaluations are intended to direct the analyst in the interpretation of responses obtained from questions contained in 4B.1 - Diagnostic Questionnaire.

Each evaluation provides a 5-point scale on which is to be recorded the analyst's rating.

Low  1  2  3  4  5  High

Evaluation 1-5 deal with individual aspects of the materials management MIS. Evaluation 6 asks for an evaluation of the materials management MIS as a whole. Evaluation 7 covers the importance of the materials management of MIS to the enterprise as a whole.

Note that no weighting of the significance of Evaluation 1-5 is given. This means that in completing Evaluation 6 the analyst must provide his/her own subjective weighting of the individual aspects based on the analyst's perception of the environment and requirements of the enterprise.

1. Management Framework

   i) Management by objective (questions 1-3 in 4B.1.2.1)

   1  2  3  4  5

   Comments: 

   ii) Adequacy of organizational structure (questions 4-7 in 4B.1.2.2)

   1  2  3  4  5

   Comments:
iii) Adequacy of materials management policies and procedures
(questions 8-10 in 4B.1.2.3)

1 2 3 4 5

Comments: ____________________________________________
_______________________________________________________

OVERALL 1 2 3 4 5

Comments: ____________________________________________
_______________________________________________________

2. Strategic Planning

Adequacy of the long-term materials management planning system
(questions 1-5 in 4B.1.3.1)

1 2 3 4 5

Comments: ____________________________________________
_______________________________________________________

3. Tactical Planning

Adequacy of the short-term materials management planning system
(questions 6-9 in 4B.1.3.2)

1 2 3 4 5

Comments: ____________________________________________
_______________________________________________________

4. Management Control

Adequacy of control information and control system (questions
10-12 in 4B.1.3.3)

1 2 3 4 5

Comments: ____________________________________________
_______________________________________________________
5. **Data Management**

Adequacy of data management (questions 13-18 in 4B.1.3.4 and Section 4B.2)

1 2 3 4 5

Comments: ____________________________________________
_____________________________________________________

6. **Overall Rating**

Based on the ratings in 1-5 above, provide a summary rating of the materials MIS?

1 2 3 4 5

Comments: ____________________________________________
_____________________________________________________

7. **Function Weighting**

What is the importance of the materials management MIS to the enterprise compared with other functions' MIS?

1 2 3 4 5

Comments: ____________________________________________
_____________________________________________________

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4. OPERATIONS

C. Maintenance

The objective of the Maintenance Segment of a Management Information System is to provide management with relevant, timely information for:

- facilitating achievement of low operating and maintenance costs, and minimum downtime and equipment failure;
- assessing supplier and equipment performance and selection; and
- planning maintenance requirements.

Use the accompanying questionnaire given in the first section in gathering relevant information and identifying deficiencies in the maintenance segment of the management information system. Complete as much of the questionnaire as possible in advance of the interview. The analyst may be able to answer the many questions based on background research on the enterprise and the country. This advance work will relieve the analyst of the need to use time during the interview pursuing these matters.

The second section (Adequacy of Transaction Recording System) can be used to assess the ability of the company to maintain data and record business transactions.

The third section (Quantification of the Assessment) provides a mechanism to quantify the responses obtained in the two earlier sections.
4C.1 Diagnostic Questionnaire

4C.1.1 Business Environment

Questions 1–4 develop an understanding of the environment in which the maintenance function operates. This environment should be a major determinant of the enterprise's information needs.

(4C.1.1.1) Plant and Equipment

1. Is the company capital intensive? Is there a substantial variety of equipment requiring maintenance?

(4C.1.1.2) Maintenance Supplies

2. Is supply of repair and maintenance parts reasonably stable? Are prices stable?

3. Is the enterprise geographically remote from its source of equipment, maintenance and repair parts? Is the transportation network efficient, timely, reliable?

(4C.1.1.3) Economic and Political Characteristics

4. Are there any significant economic and political constraints affecting the enterprise's ability to secure spare parts?
4C.1.2 Management Framework

Questions 1-10 deal with managerial practices and organization structure that may impact on the effectiveness of the MIS.

(4C.1.2.1) Goals and Objectives

1. Does the enterprise establish long- and short-term goals and objectives for maintenance of operation? If so, what are they?

2. Are these goals and objectives clearly conveyed to maintenance managers and staff?

3. Are the maintenance performances regularly reviewed according to the established goals and objectives?

(4C.1.2.2) Organizational Structure

4. What is the organizational structure of the enterprise's maintenance function? Has this been clearly documented in organizational charts and position descriptions?

5. What are the maintenance managers' major responsibilities and authorities? Are they matched?

6. What is the educational and occupational background of maintenance personnel?
7. How does the maintenance management interact with:

a) finance? 

b) production? 

c) materials management? 

(4C.1.2.3) Policies

8. Indicate in which of the following areas policies have been established:

a) Routine maintenance schedules  Yes  No 

b) Preventive maintenance programs  Yes  No 

c) Scheduled plant shutdowns  Yes  No 

d) Work order system  Yes  No 

e) Contract maintenance  Yes  No 

f) Machinery and equipment replacement  Yes  No 

g) Training  Yes  No 

9. Do maintenance policies reflect an awareness of the enterprise's demands for product quality, service and value? Explain: 

10. Are the maintenance policies reviewed and revised as required and distributed or communicated to appropriate personnel? Explain: 

4C.1.3 Management Information

Questions 1-21 focus on a basic description of the available information.
(4C.1.3.1) Strategic Planning

1. Does the enterprise develop a long-term maintenance plan? What period is covered? How often is it updated?

2. To what extent does the long range maintenance plan cover:
   a) Supplier recommended maintenance programs?
   b) Future price and availability of maintenance parts and labour?
   c) Nature, location and development of maintenance facilities
      - company owned and operated?
      - maintenance contracts?
   d) Expected service levels?
   e) Replacement requirements?

3. Who coordinates development of the long-term maintenance plans? Who participates? Who approves? What sources of information are used in their development? How are persons outside of maintenance management involved?

4. Do the long-range maintenance plans set out for maintenance managers specific performance variables that can be used for control and evaluation purposes? To what levels in the maintenance organization are the goals directed?
5. What are the principal sources of information for strategic planning:
   a) Technological changes affecting maintenance requirements?
   b) Economic and political conditions affecting the enterprise, its suppliers and competitors (e.g., foreign policies of a supplier-nation impacting on supply and, indirectly, price)?
   c) Supplier characteristics? (e.g., size, dependability, reputation)

(4C.1.3.2) Tactical Planning

6. Does the enterprise develop a short-term maintenance plan? What period is covered? How often is it updated?

7. Does the short-term maintenance plan reflect production schedules set out in the production plan?

8. To what extent is a protective maintenance scheme incorporated in the plan?


10. Does the short-term maintenance plan set out for maintenance managers specific performance variables that can be used for control and evaluation purposes?
(4C.1.3.3) Management Control

11. What are the major reports received by top management concerning maintenance management? How frequently are they prepared? To whom are they distributed?

12. Indicate the information available to monitor the enterprise's maintenance activities:
   a) Maintenance cycle?
   b) Maintenance time standards?
   c) Downtime of facilities?
   d) Cost of downtime (including lost production)?
   e) Volume of maintenance work orders?
   f) Maintenance supplies and labour usage?
   g) Maintenance costs?
   h) Spare parts inventory

13. What performance measures are routinely prepared for management? (Some common measures are listed below, but this list is not exhaustive). How frequently are they prepared? Are they prepared for product, product line or location, where applicable?
   a) Ratio of maintenance costs to total operating costs
   b) Comparison of actual and planned equipment downtime
   c) Ratio of downtime to running time
   d) Ratio of non-scheduled downtime to total downtime
(4C.1.3.4) Data Management

Pose the following questions initially to the executive responsible for maintenance; depending on the organization arrangements it may be necessary to refer some questions to a data processing executive.

14. What are the principal files and records of maintenance information (transactions/operating and reference) maintained by the enterprise? On what storage media are they maintained?

15. What are the enterprise's policies on retention of maintenance records?

16. What filing system is used to provide access to information in files and records and to provide linkages between records?

17. Where are the files and records physically stored? What are the physical storage arrangements?

18. How are operating units able to access information from files and records that are not under their control? How is the information transmitted?
19. Does the enterprise maintain a data base from which it can develop maintenance analyses as the need for such analyses is identified? 

20. Do you consider that the maintenance MIS system provides the information you need for planning, decision making and control? 

21. What do you think would be the most helpful improvements that could be made in the maintenance segment of the present MIS?
4C.2 Adequacy of Transaction Recording System

This section is to be completed by the analyst only after viewing the pertinent procedures and documents.

Time permitting, supplement your answers to the following questions with a description of the relevant systems, procedures or records, as appropriate.

1. Does the enterprise maintain some form of work order system that includes the following:
   
   a) Controls to ensure that no job is undertaken without authorization in the form of a properly approved work order?  

   b) Requirement that all work orders include the following information: description of work, location, urgency or priority, estimated time for completion, and cost code? 

   c) Use of work orders as a basis for determining materials, equipment, labour and supervision requirements? 

   d) Record of actual resource usage for comparison with estimates. 

2. Is there a breakdown reporting systems:
   
   a) Breakdown history record? 

   b) Frequency and downtime reporting? 

   c) Analysis and action to minimize reoccurrences 

3. Is there a planned maintenance system?
   
   a) Controls to ensure adherence? 

   b) Feedback to history file? 

   c) Follow-up of "not completed" items? 

4. Is there a mechanism for economic analysis of maintenance, e.g., repair vs. replace cost etc.
The following evaluations are intended to direct the analyst in the interpretation of responses obtained from questions contained in 4C.1 - Diagnostic Questionnaire.

Each evaluation provides a 5-point scale on which is to be recorded the analyst's rating.

Low 1 2 3 4 5 High

Evaluation 1-5 deal with individual aspects of the maintenance MIS. Evaluation 6 asks for an evaluation of the maintenance MIS as a whole. Evaluation 7 covers the importance of the maintenance of MIS to the enterprise as a whole.

Note that no weighting of the significance of Evaluation 1-5 is given. This means that in completing Evaluation 6 the analyst must provide his/her own subjective weighting of the individual aspects based on the analyst's perception of the environment and requirements of the enterprise.

1. **Management Framework**

   i) Management by objective (questions 1-3 in 4C.1.2.1)

   1 2 3 4 5

   Comments: _______________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   ii) Adequacy of organizational structure (questions 4-7 in 4C.1.2.2)

   1 2 3 4 5

   Comments: _______________________________________________________
   ________________________________________________________________
   ________________________________________________________________

4C. Operations - Maintenance

4C.3 Quantification of the Assessment
iii) Adequacy of maintenance policies and procedures (questions 8-10 in 4C.1.2.3)

1 2 3 4 5

Comments: ____________________________________________

OVERALL 1 2 3 4 5

Comments: ____________________________________________

2. Strategic Planning

Adequacy of the long-term maintenance planning system (questions 1-5 in 4C.1.3.1)

1 2 3 4 5

Comments: ____________________________________________

3. Tactical Planning

Adequacy of the short-term maintenance planning system (questions 6-10 in 4C.1.3.2)

1 2 3 4 5

Comments: ____________________________________________

4. Management Control

Adequacy of control information and control system (questions 11-13 in 4C.1.3.3)

1 2 3 4 5

Comments: ____________________________________________

4C. Operations - Maintenance
4C.3 Quantification of the Assessment
5. Data Management

Adequacy of data management (questions 14-19 in 4C.1.3.4 and Section 4C.2)

1 2 3 4 5

Comments: _____________________________________________________________

6. Overall Rating

Based on the ratings in 1-5 above, provide a summary rating of the maintenance MIS?

1 2 3 4 5

Comments: _____________________________________________________________

7. Function Weighting

What is the importance of the maintenance MIS to the enterprise compared with other functions' MIS?

1 2 3 4 5

Comments: _____________________________________________________________

4C. Operations - Maintenance
4C.3 Quantification of the Assessment
5. NEW INVESTMENTS AND PROCUREMENT

The objective of the New Investments and Procurement Segment of a Management Information System is to provide management with relevant, timely information for:

- planning, acquisition, and execution of new facilities and equipment; and
- exercising control over facilities and equipment procurement.

Use the accompanying questionnaire given in the first section in gathering relevant information and identifying deficiencies in the facilities and equipment management information system. Complete as much of the questionnaire as possible in advance of the interview. The analyst may be able to answer many questions based on background research on the enterprise and the country. This advance work will relieve the analyst of the need to use time during the interview pursuing these matters.

The second section (Adequacy of Transaction Recording System) can be used to assess the ability of the company to maintain data and record business transactions.

The third section (Quantification of the Assessment) provides a mechanism to quantify the responses obtained in the two earlier sections.
5.1 Diagnostic Questionnaire

5.1.1 Business Environment

Questions 1-5 develop an understanding of the environment in which new investments and procurement occur.

1. Are the technologies employed by the enterprise subject to rapid change and early obsolescence?

2. Are the facilities required by the company subject to economies of scale?

3. Is the enterprise involved in a long-term program of expansion or upgrading of its process technology?

4. Do the required facilities and equipment have to be custom designed?

5. To what extent do the markets served by the enterprise provide opportunities for expansion of business beyond the capacity of existing facilities?
5.1.2 Management Framework

Questions 1-8 deal with managerial practices and organization structure that may impact on the effectiveness of the MIS.

(5.1.2.1) Goals and Objectives

1. Does the enterprise establish long- and short-term goals and objectives for project management? If so, what are they? ______________________________
   _______________________________________________________
   _______________________________________________________

2. Are these goals and objectives clearly conveyed to the project managers and staff? ______________________________
   _______________________________________________________
   _______________________________________________________

3. Are the project management performances regularly reviewed according to the established goals and objectives? ______________________________
   _______________________________________________________
   _______________________________________________________

(5.1.2.2) Organizational Structure

4. Has a fully staffed Project Unit, or other suitable organizational unit been created or assigned the responsibility for management of major capital acquisitions and projects? Explain: ______________________________
   _______________________________________________________
   _______________________________________________________

5. Has the Project Unit been provided with adequate authority, responsibility, and staffing to carry out the critical functions (including process engineering, procurement, construction supervision, planning, financing and control) relating to the new project? ______________________________
   _______________________________________________________
   _______________________________________________________

6. To what extent has this responsibility been clearly documented in organization charts and position descriptions? (Attach copies of organization charts). ______________________________
   _______________________________________________________
   _______________________________________________________
(5.1.2.3) **Policies**

7. Indicate in which of the following areas policies have been established.

   a) Requirements for project proposals? **Yes** _No_
   
   b) Project evaluation criteria (e.g., net present value; internal rate of return; sensitivity analysis)? **Yes** _No_
   
   c) Project authorization? **Yes** _No_
   
   d) Project planning and budgeting (e.g., critical path method; project evaluation and review techniques)? **Yes** _No_
   
   e) Project management? **Yes** _No_
   
   f) Requirements for post evaluation and audit? **Yes** _No_
   
   g) Approved contractor/supplier listing? **Yes** _No_
   
   h) Contractor evaluation criteria? **Yes** _No_
   
   i) Bidding and procurement procedures? **Yes** _No_
   
   j) Contractor administration? **Yes** _No_
   
   k) Engineering drawing control and numbering system? **Yes** _No_
   
   l) Engineering change control? **Yes** _No_
   
   m) Inspection and expediting? **Yes** _No_

8. Are the policies and procedures referred to above reviewed and revised as required and distributed or communicated to appropriate personnel? Explain:

---

5.1.3 **Management Information**

Questions 1-12 focus on a basic description of the information available for management of facilities and equipment procurement.

(5.1.3.1) **Strategic Planning**

1. Does the enterprise develop a long-term capacity and process improvement plan? What period is covered? How often is it updated?
2. Are proposed new investments properly assessed from the technical, financial and economic points of view? Which are the relevant criteria used for the decision?

3. To what extent does the long-term finance plan reflect the future facility requirements to support strategic plans in:
   a) Marketing, distribution, and transportation?
   b) Production, maintenance and materials management?

4. Is there a long-term bidding and procurement strategy?

(5.1.3.2) Tactical Planning

5. How is the long-term facilities plan translated into an annual facilities plan in terms of capital budgeting, staff assignment, and organizational changes?

6. Are there mini-investment programs initiated and implemented within a year? What are their size compared with the size of long-term projects? How are the programs organized?
(5.1.3.3) Management Control

7. What are the major reports received by top management concerning new investments and equipment procurement. The following are examples of typical reports with an outline of their contents:

a) Permanent records of project expenditures and fund flows.

b) Monthly project status, covering:
   - status of engineering, procurement, erection, civil works, start-up.
   - highlights of major events, milestones, or developments.
   - deviations from targets or programs, with explanations and action taken.
   - percentage of completion.

c) Quarterly project progress, covering:
   - status of engineering, procurement, erection, civil works, start-up.
   - identification and update of critical path activities.
   - update of targets for project components and project completion.
   - update on the business environment:
     (i) changes in the enterprise organization and management;
     (ii) status of other work related to the project;
     (iii) developments in the industry or enterprise operations.
   - current cost projections, actual costs to date and commitment.
   - status of financing plan.
(5.1.3.4) **Data Management**

8. How and where are the project data filed? 

9. How could the relevant data for projects be retrieved from other parts of the enterprise (e.g., production, marketing, and finance functions)? Are such data accessible at staff level or usually requiring authorization of the managers? 

10. Does the enterprise maintain a project data base for future reference in case of new projects? 

(5.1.3.5) **Overall Management Views on the MIS Segment**

11. Do you consider that the MIS provides the information you need for management of facilities and equipment procurement? 

12. What do you think would be the most helpful improvements that could be made to this segment of the MIS?
5.2 Adequacy of Transaction Recording System

This section is to be completed by the analyst only after viewing the pertinent procedures and documents.

Time permitting, supplement your answers to the following questions with a description of the relevant systems, procedures or records, as appropriate.

1. Does the enterprise maintain some form of capital expenditure control system that includes the following features:

   a) Preparation of complete feasibility studies for new investments, demonstrating their technical, economic and financial viability?

   b) Documentation of top management approval for the project and its budget (commonly called "Authority for Expenditure")?

   c) Preparation of tender documents including a clear specification of the performance requirement to be met by the facility or equipment to be constructed or acquired?

   d) Evaluation of bids and proposals received from contractors?

   e) Preparation of contract documents and contract change orders?

   f) Review and approval of contractors' progress billings?

   g) Recording of commitments against the authorized project budgets?

   h) Recording of actual costs (with details of distribution, where appropriate) in a fixed asset ledger or construction-in-progress ledger, as applicable?

   Yes  No

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5.1 Questionnaire
5.3 Quantification of the Assessment of the Segment

The following evaluations are intended to direct the analyst in the interpretation of responses obtained from question contained in 5.1 - Diagnostic Questionnaire.

Each evaluation provides a 5-point scale on which is to be recorded the analyst's rating.

Low 1 2 3 4 5 High

Evaluation 1-5 deal with individual aspects of the maintenance MIS. Evaluation 6 asks for an evaluation of the maintenance MIS as a whole. Evaluation 7 covers the importance of the maintenance of MIS to the enterprise as a whole.

Note that no weighting of the significance of Evaluation 1-5 is given. This means that in completing Evaluation 6 the analyst must provide his/her own subjective weighting of the individual aspects based on the analyst's perception of the environment and requirements of the enterprise.

1. Management Framework

   i) Management by objective (questions 1-3 in 5.1.2.1)

   1 2 3 4 5

   Comments: ____________________________________________
   _______________________________________________________

   ii) Adequacy of organizational setup (questions 4-6 in 5.1.2.2)

   1 2 3 4 5

   Comments: ____________________________________________
   _______________________________________________________

5. New Investments and Procurement
5.2 Transaction Recording System
iii) Adequacy of policies and procedures for new investments and procurement (questions 7-8 in 5.1.2.3)

1 2 3 4 5

Comments: ____________________________________________________________

OVERALL 1 2 3 4 5

Comments: ____________________________________________________________________________

2. Strategic Planning

Adequacy of the long-term planning system for new investments and procurement (questions 1-4 in 5.1.3.1)

1 2 3 4 5

Comments: ____________________________________________________________

3. Tactical Planning

Adequacy of the short-term planning system (questions 5-6 in 5.1.3.2)

1 2 3 4 5

Comments: ____________________________________________________________________________

4. Management Control

Adequacy of control information and control system (question 7 in 5.1.3.3)

1 2 3 4 5

Comments: ____________________________________________________________________________

108 5. New Investments and Procurement

5.3 Quantification of the Assessment
5. **Data Management**

Adequacy of data management (questions 8-10 in 5.1.3.4 and Section 5.2)

1 2 3 4 5

Comments: ____________________________________________

_________________________________________________________________

6. **Overall Rating**

Based on the ratings in 1-5 above, provide a summary rating of the new investments and procurement MIS.

1 2 3 4 5

Comments: ____________________________________________

_________________________________________________________________

7. **Function Weighting**

What is the importance of the new investments and procurement MIS to the enterprise compared with other functions' MIS?

1 2 3 4 5

Comments: ____________________________________________

_________________________________________________________________
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