Module II [40 Hours IT Training]

Chapter One: Advanced Spreadsheets [15 Hours]

Learning Objectives

- *To perform data auditing activities using Excel features,*
- *To work on Excel for advanced data analysis such as PivotTable, Goal Seek Analysis, and Scenario Analysis,*
- *To use Excel for mathematical calculations, statistical analysis, applied financial analysis, and financial statement forecasting,*
- *To create and use a MACRO to automate a task in Excel,*
- *To use XML in Excel to exchange data in a standard format between systems,*
- *To learn how to create an Excel dashboard that allows to quickly view and analyze data from multiple worksheets in one place,*
- *To apply Excel in financial analysis such as budgeting, cost analysis, depreciation, EMI calculation, and tax calculation,*
- *To familiarize with the features of Google spreadsheet and to use it as a collaborative tool.*

1.1 MS-Excel as an Audit Tool (Based on Recent version of MS-Excel)

1.1.1 Revision on MS Excel,
1.1.2 Use Excel for auditing (Get/Import Data, Clean Data, Analyze the Data, and Presenting the finding),
1.1.3 Get Data: Importing Data into Excel,
1.1.4 Clean Data: Use of Flash fill, Left, Sort, Filter, Vlookup, Trim, Xlookup, and unique functions,
1.1.5 Analyze the Data: Use of PivotTable,
1.1.6 Presenting the Finding: Pivot Charts.

1.2 Useful functions for auditing and Formula Auditing

1.2.1 AGGREGATE, ROUND, VLOOKUP, HLOOKUP, ROUND, INT, FLOOR, CEILING, INDEX, MATCH, SUMIFS, COUNTIFS, TRIM, CLEAN, CONCATENATE, RIGHT/LEFT/MID,
1.2.2 Trace Precedents,
1.2.3 Remove Arrows,
1.2.4 Trace Dependents,
1.2.5 Show Formulas,
1.2.6 Error Checking,
1.2.7 Evaluate Formula.

1.3 Advanced Data Analysis Tools (Such as Advanced Spreadsheet Pivot Table, Goal Seek, scenario Analysis)

1.3.1 Use of PivotTable for data analysis,
1.3.2 Performing Goal Seek Analysis,
1.3.3 Performing Scenario Analysis,

1.4 Mathematical/Statistical/Applied Financial Analysis and Forecasting Financial Statements

1.4.1 Statistical Analysis using ToolPak in Excel,
1.4.2 Use of Descriptive Statistics,
1.4.3 Use of correlation and covariance,
1.4.4 Creating a Histogram,
1.4.5 Confidence Interval,
1.4.6 Level of Confidence and Significance,
1.4.7 Z test and ANOVA Hypothesis test,
1.4.8 Regression Analysis,
1.4.9 Use of Excel for Financial Analysis: Balance sheet, accounting ratios,
1.4.10 Applications of Excel for DuPont Analysis, Leasing decisions, and Equity Analysis.

1.5 Macros

1.5.1 Introduction to Macros in Excel,
1.5.2 Recording a Macro using Excel Macro Recorder,
1.5.3 Writing a Macro using VBA code,
1.5.4 Use of Relative and Absolute References in Excel Macros
1.5.5 Macro Settings (Enabling and disabling Macros),
1.5.6 Editing Macros using VBA editor,
1.5.7 Running a Macro,
1.5.8 Uses/applications of Macros,
1.5.9 Saving a Macro enabled file.

1.6 Working with XML

1.6.1 Introduction to XML,
1.6.2 XML data and Schema File,
1.6.3 Uses/applications of XML,
1.6.4 Working with XML Maps,
1.6.5 Importing XML data into Excel,
1.6.6 Exporting Excel data to XML.

1.7 Dashboard Reporting using excel

1.7.1 Designing a dashboard reporting.

1.8 Application of Excel in Accounts and Finance

1.8.1 Excel in Capital Budgeting,
1.8.2 Excel in Cost Analysis,
1.8.3 Excel in Depreciation and Amortization,
1.8.4 Excel in EMI calculation,
1.8.5 Excel in Tax calculation.

1.9 Google Spreadsheet

1.9.1 Introduction to Google Spreadsheet,
1.9.2 Opening Google Spreadsheet,
1.9.3 Creating and editing content in Google Spreadsheet,

1.9.4 Formatting in Google Spreadsheet,
1.9.5 Functions and formulas in Google Spreadsheet,
1.9.6 Data analysis in Google Spreadsheet,
1.9.7 Sharing Google Spreadsheet with other in a team.

Chapter Two: Computer Aided Audit Techniques (CAAT) and Remote Audit [15 Hours]

Learning Objectives

- *To understand the concept of using Computer Aided Audit Techniques in the audit process,*
- *To familiarize and work with audit software and tools such as IDEA and ACL in auditing,*
- *To learn about various cyber-attacks on information assets and the implementation of security mechanisms to mitigate them,*
- *To learn auditing of Information Asset in an organization,*
- *To comprehend the remote auditing process, as well as the tools and techniques used in it.*

2.1 Using CAAT in Audit Process

2.1.1 Introduction to CAAT,
2.1.2 Role of CAAT in Audit process,
2.1.3 Key features and capabilities of CAAT,
2.1.4 Methodology for using CAAT in audit process,
2.1.5 Understanding IT environment (IT resources, application, data, infrastructure, data format),
2.1.6 Auditing in computer-based environment,
2.1.7 CAAT and audit evidence,
2.1.8 CAAT documentation,
2.1.9 Audit Sampling in CAAT,

2.2 System Review and control

2.2.1 CAAT for system review,
2.2.2 Management Control of Information Systems (Top Management Controls, Systems Development Management Controls, Programming Management Controls, Data Resource Management Controls, Security Management Controls, Operations Management Controls, Quality Assurance Management Controls),
2.2.3 Application Control of Information Systems (Boundary Controls, Input Controls, Communication Controls, Processing Controls, Database Controls, Output Controls),

2.3 Audit Software and Tools (including IDEA, ACL) and audit techniques

2.3.1 Introduction to Audit Software and Tools,
2.3.2 Importing Data into IDEA,
2.3.3 Exporting Data from IDEA,
2.3.4 Use of functions,
2.3.5 Data Sampling,
2.3.6 Data extraction,
2.3.7 Statistical analysis,
2.3.8 Searching and Sorting,

2.3.9 Define Action fields,
2.3.10 Field Manipulation,
2.3.11 Chart Data,
2.3.12 Summarization,
2.3.13 Consolidation of data: Pivot Table,
2.3.14 Stratification,
2.3.15 Duplicate Detection,
2.3.16 Gap detection,
2.3.17 Aging,
2.3.18 Join Databases,
2.3.19 Reporting,
2.3.20 Access Control List (ACL) Fundamentals,
2.3.21 Understanding ACL software user graphical interface (GUI), ACL inbuilt features & functionalities,
2.3.22 Importing data into ACL,
2.3.23 Exporting data to other data types from ACL,
2.3.24 Create tables to access data (flat files, Excel, XML etc.) in ACL,
2.3.25 Display and filter data in ACL,
2.3.26 Identifying missing items, errors, duplicates and gaps using ACL,
2.3.27 Reorder and combine tables in ACL,
2.3.28 Visualizing/Reporting functionalities using ACL.

2.4 Security and Auditing of Information Assets

2.4.1 Overview of Information Assets,
2.4.2 Classification of Information Assets,
2.4.3 Common attack methods and techniques on Information Assets (Flooding, malicious codes, Main-in-the-middle attack, Masquerading, Message Modification, network analysis, Packet replay, Phishing, Piggybacking, Distributed Denial-of-Service (DDoS) attack, SQL injection, Password attack),
2.4.4 Implementing Security Mechanism at organization level to protect Information Assets (Security strategies, Risk Assessment, Disaster Recovery Plans, Security polices / guidelines, Security audits, Regulatory standards compliances, Monitoring with security dashboard),
2.4.5 Implementing Security Mechanism at Network level to protect Information Assets (Authentication Methods: Single or Two factor Authentication, Firewalls, VPN, IDS/ IPS, Encryption),
2.4.6 Implementing Security Mechanism at Application level to protect Information Assets (Authentication Methods, User accounts, User's access/Role management, Data Encryption),
2.4.7 Implementing Security Mechanism at End-user level to protect Information Assets (Education and awareness: frequently password change, Authentication mechanism, use of Antivirus software, Data Encryption, use of Digital Signature),
2.4.8 Types of Information Asset Audit (Internal and external audit),
2.4.9 Information Asset Auditing process,

2.4.10 Auditing Data Centers and Disaster Recovery, Auditing Network Devices, Auditing Servers, Auditing databases, auditing applications, Auditing storages, Auditing end-user computing devices,
2.4.11 Benefits of Information Asset Audit.

2.5 Remote Auditing

2.5.1 Introduction to Remote Auditing,
2.5.2 Benefits of Remote Auditing,
2.5.3 Remote Audit Tools and Technology (Remote Login, Web conferencing, Smart Phones, Drones, Visual Facility Tools),
2.5.4 Remote Auditing Methodology/Procedure.

Chapter Three: Database Management System and Database Application using MS Access [8 Hours]

Learning Objectives

- *To understand the concept of Database Management System, its types and uses in an organization,*
- *To learn about database languages such as DDL, DML, DCL, TCL and SQL,*
- *To work with MS Access database to handle database management related operations,*
- *To learn how to design and develop forms for user input and reports for output in MS Access,*
- *To understand the criteria expression and advanced queries to apply in database applications,*
- *To create and use a MACRO to automate a task in MS Access,*
- *To learn how to create dashboard on MS Access that allows you to quickly view and analyze data in a single location.*

3.1 Data Management and Data Mining

3.1.1 Introduction to Data, Database, Data management and Database Management System (DBMS),
3.1.2 Need of DBMS,
3.1.3 Differences between traditional File System and DBMS,
3.1.4 Basic concepts on Data Mining and its uses.

3.2 Type of Database

3.2.1 Hierarchical Database
3.2.2 Network Database,
3.2.3 Object-oriented Database,
3.2.4 Relational Database,
3.2.5 NoSQL Database.

3.3 SQL and its Commands

3.3.1 Introduction of SQL,
3.3.2 SQL Commands
3.3.2.1 Data Definition Language (DDL),

3.3.2.2 Data Manipulation Language (DML),
3.3.2.3 Data Control Language (DCL),
3.3.2.4 Transaction Control Language (TCL).

3.4 Data Administration (DA) and DBMS Application Software

3.4.1 Database Administration (DA),
3.4.2 Working with MS Access.

3.5 Advanced SQL Queries

3.5.1 Sub queries (Nested query),
3.5.2 Crosstab queries,
3.5.3 Duplicate queries,
3.5.4 Unmatched queries.

3.6 Designing Forms and Reports

3.6.1 Need of Forms and Reports in Database Application Software,
3.6.2 Create a form from an existing table or query,
3.6.3 Create a blank form,
3.6.4 Create a split form,
3.6.5 Create a form that displays multiple records,
3.6.6 Create a form that contains a sub form,
3.6.7 Create a navigation form,
3.6.8 Understanding Controls and adding them in a form,
3.6.9 Create a report by using the Report tool,
3.6.10 Create a report by using the Report Wizard,
3.6.11 Create labels by using the Label Wizard,
3.6.12 Create a report by using the Blank Report tool,
3.6.13 Understand the report sections,
3.6.14 Understanding controls and adding them to the report,
3.6.15 View and print report,
3.6.16 Design an application using forms and reports,
3.6.17 Use of themes in forms and reports.

3.7 Building Criteria Expressions

3.7.1 Understanding the need for Criteria Expression,
3.7.2 Use expressions as query criteria,
3.7.3 Working with Expression builder,
3.7.4 Create a calculated value in a table or a query.

3.8 Macros and Switchboards

3.8.1 Introduction to Macros in MS Access,
3.8.2 Enabling Macros in MS Access,
3.8.3 Creating and using Macros in MS Access,
3.8.4 Editing Macros using VBA editor,
3.8.5 Running a Macro,
3.8.6 Create a switchboard,

3.8.7 Add and edit items to a switchboard,
3.8.8 Delete a switchboard or switchboard item,
3.8.9 Display the main switchboard on startup.

Chapter Four: Big Data Analysis [2 Hours]

Learning Objectives

- *To understand the concept of big data and its uses,*
- *To learn the most recent trends in big data usages,*
- *To familiarize with Google File System and Apache Hadoop, two well-known file systems for big data.*

4.1 General coverage of big data analysis

4.1.1 Introduction to Big Data,
4.1.2 Characteristics of Big Data (5Vs),
4.1.3 Importance of Big Data,
4.1.4 Latest trends in the use of Big Data,
4.1.5 Understanding Google File System and Apache Hadoop.

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