1

BUSINESS PROCESS

Unit Structure :

1.0 OBJECTIVES

- To understand the flow of Business Process in accounting, purchase, sales & finance.
- To understand the principles and practices of Business Process Management.
- To understand the implementation of Business Process Management.
- To understand the concept of Business Process Automation.

1.1 INTRODUCTION

What is a Process?

A process is a collection of related or linked task.

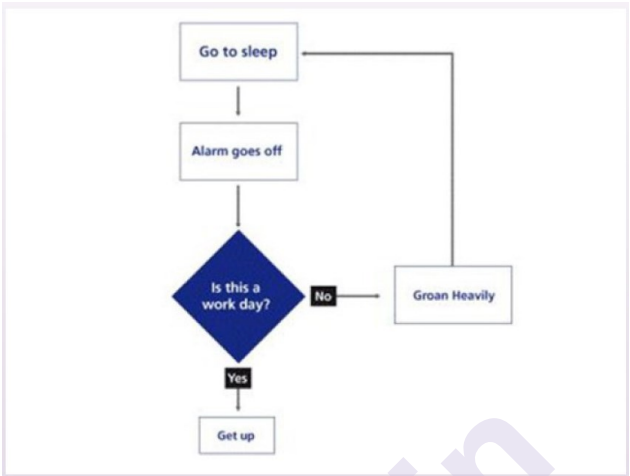


Figure: Process Flowchart

A business process is a collection of linked tasks that find their end in the delivery of a service or product to a client. A business process has also been defined as a set of activities and tasks that, once completed, will accomplish an organizational goal. The process must involve clearly defined inputs and a single output. These inputs are made up of all of the factors that contribute (either directly or indirectly) to the added value of a service or product. These factors can be categorized into **management processes, operational processes, and supporting business processes**.

Figure: Business Process

Management processes govern the operation of a particular organization's system of operation. Operational processes constitute the core business. Supporting processes, such as human resources and accounting, are put in place to support the core business processes.

The definition of the term "business process" and the development of this definition since its conception by Adam Smith in 1776 has led to such areas

of study as operations development and operations management and to the development of various business management systems. These systems, in turn, have created an industry for BPM software, seeking to automate process management by connecting various process actors via technology.

A process is defined as a series of actions to achieve a certain objective. BPM processes are continuous but also allow for ad hoc action. Processes can be simple or complex based on the number of steps required, number of systems involved, etc. They can be short or long running, with longer processes tending to have multiple dependencies and a greater documentation requirement.

Stakeholder:

Any person who has a substantial interest and concern in our business activities is a Stakeholder. Stakeholders are a key part of the entire business process. They have varying degrees of technical expertise. There are two level of stakeholders:

- Direct Stakeholders
- Indirect Stakeholders

1.2 TYPES OF BUSINESS PROCESS

Business Processes include any type of business operation such as:

A) Primary Types of Business processes:

These types of business process are extremely important and fundamental for business. The deal with the basic values and work alongside the vision and mission of the business. As the name suggests the primary process is a very basic process through which the business ensures delivery of services or products to their clients.

These processes are paid close attention to since they are an integral part of the organization. The ultimate aim of primary processes is to optimize themselves so that they add value at every step of the business as well as to the end product which internal value to the client. This improves the processes and has a direct effect on business output.There are different types of business processes under primary processes. These are as follows:

1) Sales:

Sales standalone type of business process which can make a company. Serious is considered as a primary business process because it is the ultimate revenue generator for any and every business and without revenue business cannot survive or run. Most of the startups have a strong sales system in order to get more revenue and profit generation to run the organization.

Even the Conglomerates focus on the sales process in order to generate higher profits and gains or retain market share in the market. Without sales, any organization cannot survive and that is the reason why the money spent on the sales department is the second highest of the expenses in the entire organization. The company may or may not have any other department but it is essential to have a sales department. Be it a small organization or roadside vendors or a multinational organization, without sales, none of the businesses can survive.

2) Customer service:

Since sales is an essential and primary type of business process the next one is customer service. Once the sales orders are generated it is essential that there is a back in the team which process is the orders and provides them to the customers. Customer service also helps in managing the situation when customers required information about the product or service for assistance with the technicalities of the product. Good customer service can retain customers as well as bring back lost customers better than size department.

3) Finance department:

Once the business picks up and the money starts flowing and it is essential to manage the finances. There should be a dedicated department to manage the incoming and outgoing server the finances properly so that profits are eating expenses are reduced and all the employees are paid on time.

The finance department also looks after expense management and investment management. It is essential that expenses are kept under control and all the necessary expenses are performed so that the savings and the profits left after reducing all the expenses or much higher. The finance department also deals with daily activities like expense approvals salary disbursement and taking care of all the miscellaneous and recurring expenses.

4) Operations processes:

Supply chain management and operations on the primary skill are an essential part of the business and that is why are categorized under primary processes. Once the sale starts generating inventory management and stock management should be done in a proper way in order to supply the clients with the products or services. Supply chain management is also essential for proper management of deliveries and to receive deliveries stock management and warehouse management. Basics of operations are necessary without which business cannot survive.

5) Production:

Production or manufacturing of the product is of paramount importance for any business to run. It is crucial that the organization has a product or service to sell and that is where the production and manufacturing come into the picture. Once the product is designed, crafted and approved the initial production of how the product begins in the production or manufacturing facility.

This includes recruiting of the labors who are involved in the production facility right from manufacturing of the product till packaging and dispatching it. In case of services, the production and manufacturing and services would mean crafting of services are deciding on a standard flow of services. Once the services are standardized, they are delivered accordingly to the customers.

While this is true in case of the companies that provide tangible products, in case of the companies that provide intangible products or services they would have to have a ready process which the customers can avail. Having a product or service to sell is the basic requirement of any organization. It does not matter if the product is on or not. The product may be manufactured by whom company or bought from other company and resold to the end customer, what matters is having something to sell.

B) Support Types of Business Processes

These are the types of business processes which are not involved in the delivery of the final product to the clients but they create a suitable environment for the functioning of primary processes.

They are not directly involved in generating value to the customer but support processes are important for the functioning of businesses. This process includes management processes, accounting process, human resources and such other processes to facilitate the smooth working of a company. Improving these processes makes a business strategy planning and fundamentally strong.

Following are few types of business process classified under support processes:

1) Accounting process:

The finance department is a basic requirement of every organization but Accounting processes are essential for the smooth and efficient performance of the finance department. Accounting department deals with the cash flow and the authenticity of the transactions in the organization.

It is the duty of the accounting department to let know when profits are reducing and losses are increasing. Accounting department ensures that all of the assets and liabilities are maintained correctly in the balance sheet. It also deals with accounts receivables and accounts payables, a collection of payments against sales, number of credit days to be allocated for the customer and such other functions.

2) Management process:

While it is essential that the top management is present in the company irrespective of its size, the middle management comes into the picture when there is an expansion of the organization.

Thus, middle management process falls under the secondary support process. Middle management is also responsible for getting the work done from the front line and reporting to the seniors about the work completion and target achievement. Management processes, like having a long chain of command is also a part of the support process. Work completion and delegation of authority becomes easier when Management process is present.

3) Human Resources:

While it is important to have a human resources department, it is not exactly crucial and organization working doesn't stop without having a Human resource department. Hence it is classified under the support process. Usually, the recruitment is usually done by the heads of the organization in a small company or startups. But as the workload and the corporate ladder increases are essential to have a dedicated Human resource department.

The department ensures smooth working of people in the organization, helps to resolve disputes, increases the communication between departments, encourages human values, helps in the career flow, is responsible also for appointing people in the organization induction of new candidates and smooth exit of the older candidates. Human resources deal with improving the candidates and the company equally and ensure mutual growth.

C) Management processes:

These types of business processes are similar to the support processes which do not add value to the end consumer. Management processes are concerned with orientation and monitoring and analyzing the day to day business activities. These processes reason increasing the business by introducing your articles and incorporating innovation into the business.

These are usually goal-oriented processes which I am at designing and redesigning was achieving the tangible and intangible targets. They also help in maintaining the enterprise brand and ensure standing out in the market by providing their customers with added value in intangible terms. Management processes include leadership and executive decisions which are executed at the frontlines. Deciding on the targets, new product launches, expansions or closing of different departments.

1.3 CHALLENGES IN BUSINESS PROCESS

There are numerous challenges involved in business process, including:

1. Business process not defined: because processes spring up out of a need to solve a business challenge, and then evolve toward a state of acceptance, most businesses do not have processes that are well designed and defined.
2. Business process not owned: businesses are commonly managed vertically, where the organisation chart lays out a hierarchical structure of cascading leadership and management responsibilities and accountabilities. Yet work processes flow horizontally, across vertical boundaries usually because the customer end-to- end journey cuts horizontally through your business. If you want to create a seamless customer experience, you have to break down the traditional silo mentality of functions and departments working in isolation. The effective leadership and management of work must include the individual ownership of processes that cross boundaries and functions aligned to the overall customer experience.

3. Purpose not understood: a process needs a worthy purpose to justify its existence. Without a worthy purpose, the entire process is non-value added and should be eliminated. Even for the simplest process with a single output, the process must provide something that a customer (internal or external) values and align to the overall goals and vision of the business.
4. Business process not followed: perhaps the most obvious one but also the most common. Processes are designed to be followed. When they are, they can deliver a predictable, repeatable, sustainable result; when they are not, you lose control of the outcome. This is usually a personality problem, rather than a process one.
5. Customer not understood: every process serves a customer and should create something of value, but process owners (assuming they exist) rarely know who their actual customers are, what they want from the process, and what they think of the value of the process in terms of how it meets their needs.
6. Supplier not understood: a supplier also serves every process. Just like the customer, most process owners do not know the supplier of their process, what the process needs from their supplier, and to what extent the process needs are being served effectively by their supplier.
7. Cumbersome to execute: because processes frequently grow into existence without intentional purpose or design, they tend to meander across businesses through the development of *good ideas* that add extra steps, poorly designed tasks, and additional workaround activities intended to accomplish what may have started out as a clean and simple process requirement.
8. Loaded with non-value added work: value added tasks are defined as those tasks the customer would be willing to pay for. Limited value tasks are those that are of questionable value for the customer. All others are non-value added. For every process developed what are the value added, limited-value added, and non-value added tasks?
9. Performance not measured: when businesses have front line measurements in place, they tend to be oriented vertically toward the organisation chart's definition of responsibility and accountability. They also tend to be reactive (and too late to adjust) versus proactive. Good process measurement captures both process effectiveness (the extent to which the process satisfies the customer's need or want) and process efficiency (the extent to which the process uses the minimum possible resources to do so).
10. Not linked to strategy: we frequently hear senior leadership say things like: 'We are committed to our strategy, but we can't get the people to execute.' Strategy without strong process is like a head without a body. Without having operational control of processes, it is nearly impossible to move the business toward a vision of the future.
11. Don't understand what business they are really in: There is nothing as galvanising for your people than a clear answer to your WHY. It also gives you enormous power of purpose when questioning, refining, and developing your processes to ensure they effectively lead you toward your WHY

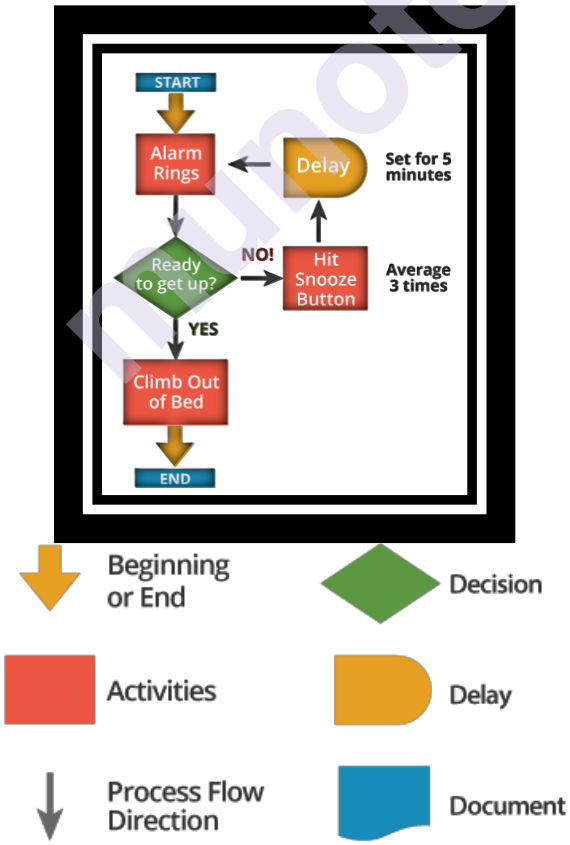
1.4 TEN CORE BUSINESS PROCESS

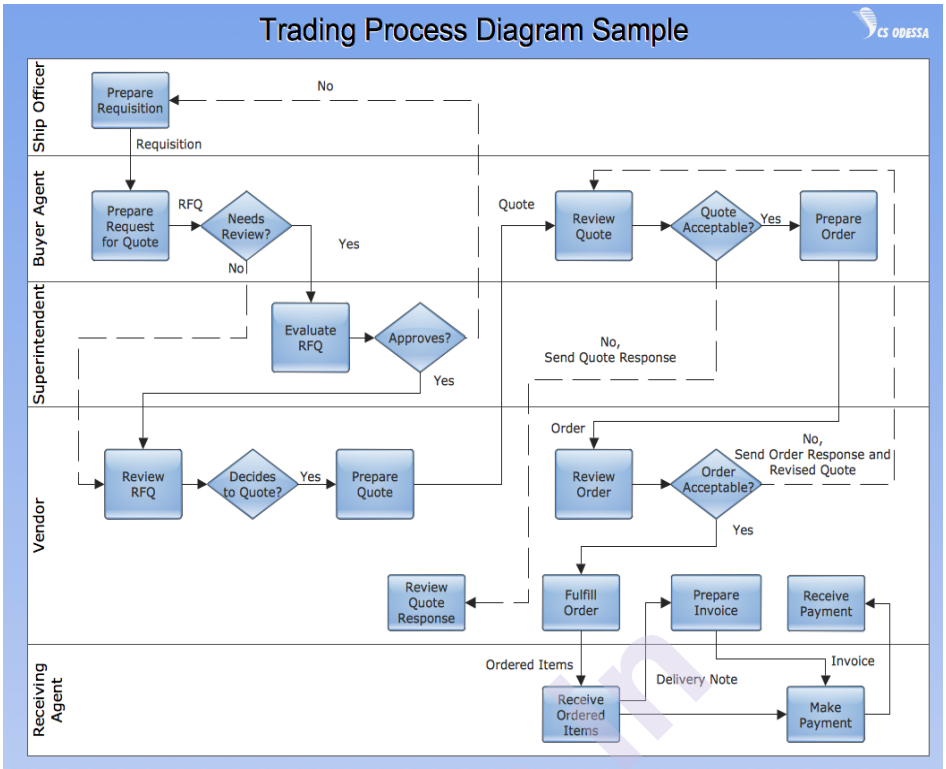
Ten core business process that exists in the organization are:

1. Customer Strategy and Relationship (Marketing)
2. Employee Development and Satisfaction
3. Quality, Process Improvement and Change Management
4. Financial Analysis, Reporting and Capital Management
5. Management Responsibility
6. Customer Acquisition(Sales)
7. Product Development
8. Product/Service Delivery
9. Accounting Management
10. Technology Management

1.5 BUSINESS PROCESS FLOW

It is also known as Flow of Business Process. They are representations of your business processes. They are mostly displayed visually. They are composed of stages. In each stage there are steps.





1.5.1 Flow of business process for accounting

Steps in the Accounting Process - The Accounting Process is a sequence of organization activities that is used for gaining quantitative information about the finances. This complex process consists of a set of sequential steps.

Nine steps in the accounting process: Analysis of Business Transactions, Make Journal Entries, Post to Ledger Accounts, Prepare Trial Balance, Make Adjusting Entries, Adjusted Trial Balance, Prepare Financial Statements, Close Accounts, Post-Closing Trial Balance.

What is the accounting cycle? The accounting cycle is a sequence of steps that occur in the accounting period and include the processes of identifying, collecting, analyzing documents, recording transactions, classifying, summarizing, and reporting financial information of an organization.

Steps of Accounting Cycle

The steps of accounting cycle include the processes of identifying, collecting, analyzing documents, recording transactions, classifying, summarizing, posting, and preparing trial balance, making journal entries, closing the books and final reporting financial information of an organization.

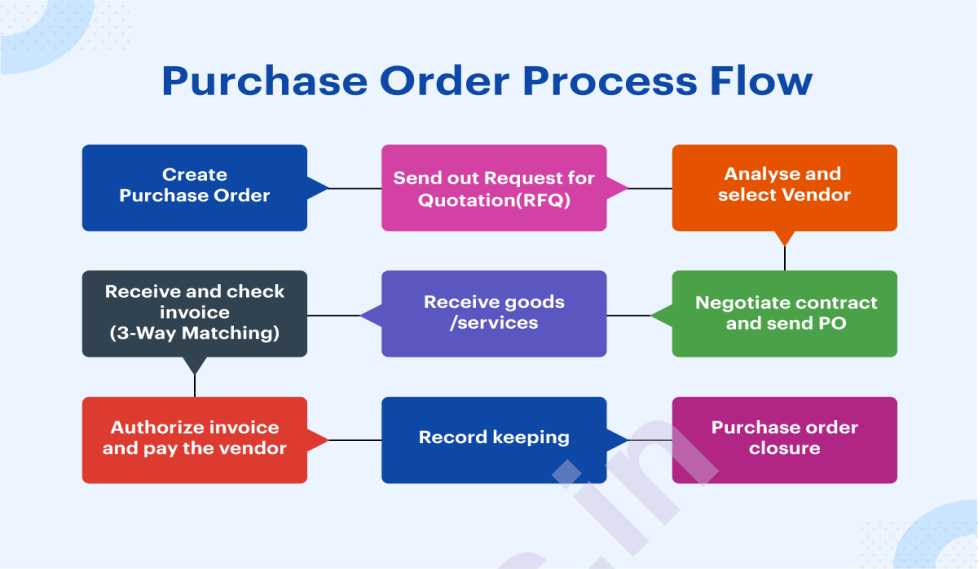
1.5.2 Flow of business process for purchase

The purchase order process consists of several compliance checkpoints and approval/input tasks to ensure timely PO processing. Here are the most common purchase order process steps:

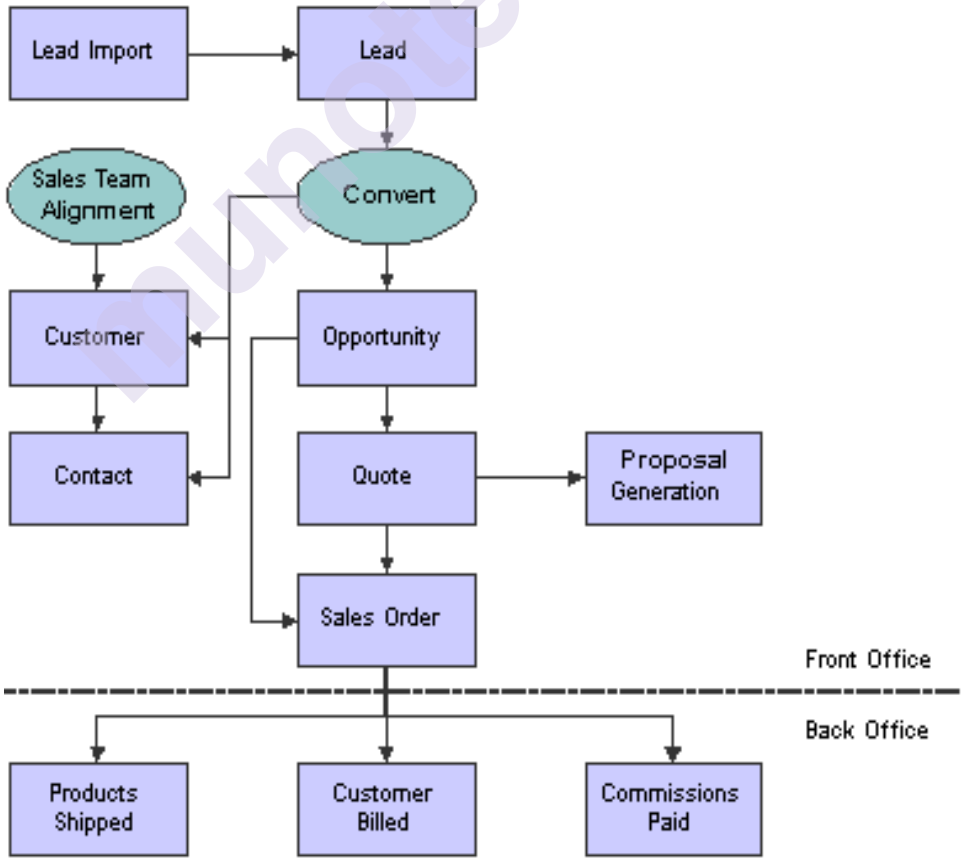
1. Create a purchase order
2. Send out multiple requests for quotation(RFQ)
3. Analyze and select a vendor
4. Negotiate contract and send PO
5. Receive goods/services
6. Receive and check invoice (3-Way Matching)
7. Authorize invoice and pay the vendor
8. Record keeping
9. Purchase order closure

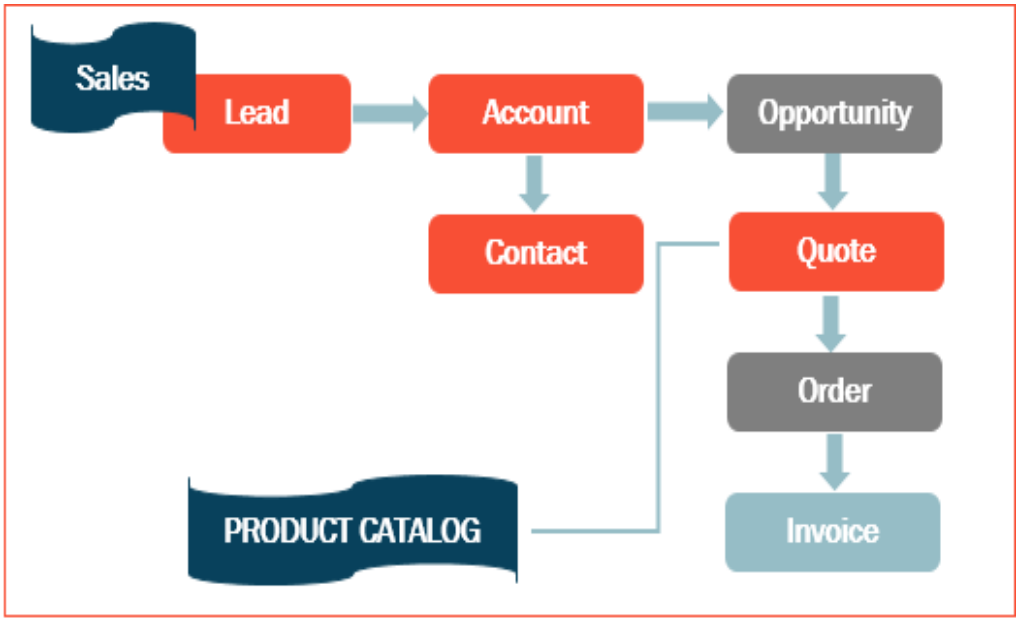
Example:
To understand a PO process, consider this real-life example. Jeni, an HR Manager is looking out for new laptops to onboard new joiners. She creates a PR, which auto flips and becomes a PO. The purchase order has information on the number of laptops, the specifications, and the time she needs them. Based on the PO, a Request for Quote (RFQ) is sent to the suppliers to get the quotes. Based on the quotes received, their quality, and estimated delivery time, a vendor is selected. Post selection of the vendor,

he/she is contracted and the PO is shared. The vendor delivers the laptops requested, Jeni receives them and verifies the products. Post this, Sathish, Accounts Manager from the Finance team performs 3-way matching and then pays the vendor if there aren't any discrepancies. The records for the transaction are kept safe, and the PO will be now marked as closed.



1.5.3 Flow of business process for sales





Sales Process common activities are:

1. Receiving Purchase Order
2. Checking availability of required goods
3. If available, then dispatch
4. If not available, then manufacture
5. For manufacturing, check raw materials
6. If raw material not available, place order
7. Perform manufacturing
8. Packaging of product
9. Arrange Transportation and dispatch
10. Billing-send invoice
11. Receive payment
12. Record transaction

1.5.4 Flow of business process for finance

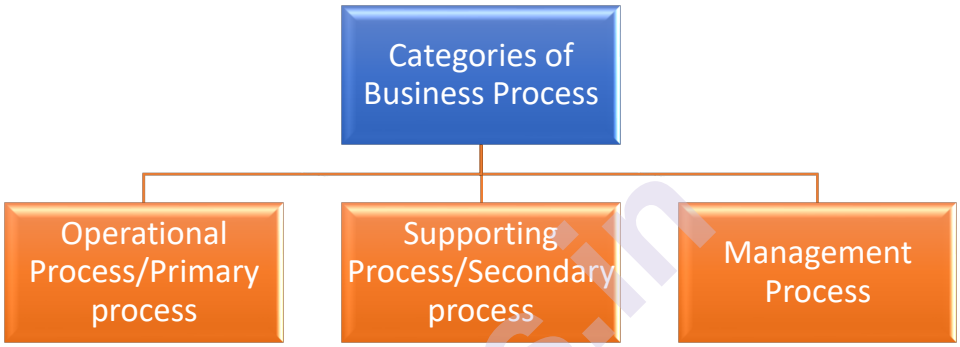
Major functions of a Finance Manager include:

- Estimating the Amount of Capital required
- Determining the Capital Structure
- Choice of Source of Funds
- Procurement of Funds
- Utilisation of Funds
- Disposal of Profits or Surplus
- Management of Cash
- Financial Control

Various Finance functions include:

- Investment Decision or Long-term Asset mix decision
- Finance Decision or Capital mix decision
- Liquidity Decision or Short-term Asset mix decision
- Dividend Decision or Profit allocation decision

1.6 CLASSIFICATION OF BUSINESS PROCESSES



1. Operational/Primary process
   - Considered to be the **most important** processes.
   - There is **direct contact** with customers.
   - **Providing value** to customers directly.
   - Reaching or **exceeding the standards** of the company.
   - Always considering the entire value chain.
2. Supporting/Secondary process
   - Formally established.
   - Supports the primary processes
   - **No contact** with customers.
   - Doesn't provide value to customers directly.
3. Management process
   - Formally Established.
   - **Coordinates the activities** of the primary and support processes.
   - **Improve business processes efficacy and efficiency**.
   - Measures, monitors, and controls.
   - Doesn't provide value to customers directly.

1.7 MEANING OF BUSINESS PROCESS MANAGEMENT

A systematic approach to make an organization's workflow more effective, more efficient and more flexible. It is a discipline that uses various methods to discover, model, analyze, measure, improve and optimize business process. Business Process Management Suite (BPMS) is a software that enables business to model, execute, monitor and optimize their processes.

1.8 DEFINITION OF BUSINESS PROCESS MANAGEMENT

"Business Process Management (BPM) is a discipline involving any combinations of modeling, automation, execution, control, measurement and optimization of business activities flows, in support of enterprise goals, spanning systems, employees, customers and partners within and beyond the enterprise boundaries"

1.9 Assumptions of Business Process Management

- BPM is an activity; a practice
- BPM is about improving process
- BPM is done by people concerned primarily
- Merely participating in a process is not doing BPM
- Making a small suggestion for process improvement is not BPM
- Improving a single step of a process is not BPM

1.10 MISCONCEPTIONS OF BUSINESS PROCESS MANAGEMENT

- BPM is a product
- It is just a workflow tool
- BPM tools require programming language
- It is only for big business and complicated processes
- BPM is expensive
- BPM works only for long term projects

The answer to all above is NO!

1.11 PRINCIPLES AND PRACTICES OF BUSINESS PROCESS MANAGEMENT

1. Principle of Context Awareness

BPM must account for the diverse nature of business - well structured or unstructured, focused or creative

Therefore one-size-fits-all approach to BPM is not appropriate

BPM must consider the organizational setting

BPM contexts between organizations(such as size, strategy, industry, market) and within organizations(such as types of processes or available resources)

2. Principle of Continuity

BPM must be understood as a journey, rather than a project

As it requires a continuous effort to learn and apply appropriately

It is NOT a one-time process

The idea of BPM is to make the management of business process mindful and how the organization improves, grows, innovates and transforms

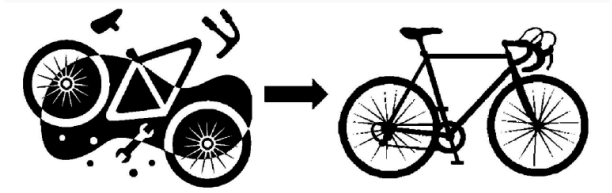
To accomplish these goals, BPM must be considered a continuous effort

3. Principle of Enablement

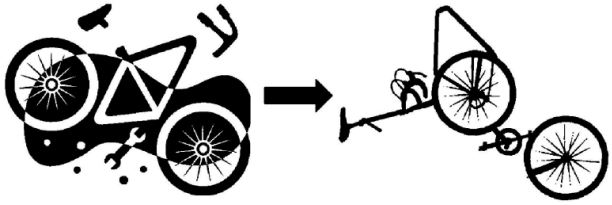
BPM must enable the people in an organization to do something good with the organization's processes

The principle of enablement focuses on the need to develop individual competencies and organizational BPM capabilities.

4. Principle of Holism



Sum of the parts equals the whole



Can't reduce the parts and retain the meaning of the whole

BPM must draw the big picture first and derive initiatives that are linked to this picture

Organizations often dive into initiatives before they understand the organization's broader context

As a result, work is sometimes done at a level of detail that is not required

A more holistic approach to be followed.

5. Principle of Institutionalization

This principle calls for embedding BPM in the Organizational Structure

BPM roles and responsibilities ensure a more customer-centric, horizontal integration of work.

6. Principle of Involvement

All stakeholder groups who are affected by BPM should be involved

Responsiveness of people and their true commitment is critical to the success of BPM.

7. Principle of Joint Understanding

Introduce and sustain a common language allowing different stakeholders to view, frame and analyze organizational systems

Process models should be simple and intuitive to create shared meaning and common understanding.

8. Principle of Purpose

BPM as a management method to achieve organizational change and create value

It should not be adopted because it is vogue, or it is "the way of doing things"

It should serve a specific purpose that is relevant to an organization.

9. Principle of Simplicity

The amount of resources invested in BPM should be economical

The simplest way of business processes help to achieve the BPM-related goals.

10. Principle of Technology Appropriation

BPM should make opportune use of technology in general, and IT in particular

IT solutions can help increase the efficiency and effectiveness of business processes.

1.12 BUSINESS PROCESS MANAGEMENT LIFE CYCLE

1. **Designing**

   Need to design new processes, or redesign the existing ones

   To come up with a process design that provides a full picture of the process

   To determine whether the process is "as is" or "to be"

2. **Modeling**

   Representing the business process in a structural form

   The model serves as a ready reference for members of the organization

3. **Executing**

   It is also known as implementation of business process

   It can be systemic implementation or non-systemic implementation

   systemic = use of specific softwares and technologies

   non-systemic = no use of BPM tools

4. **Monitoring**

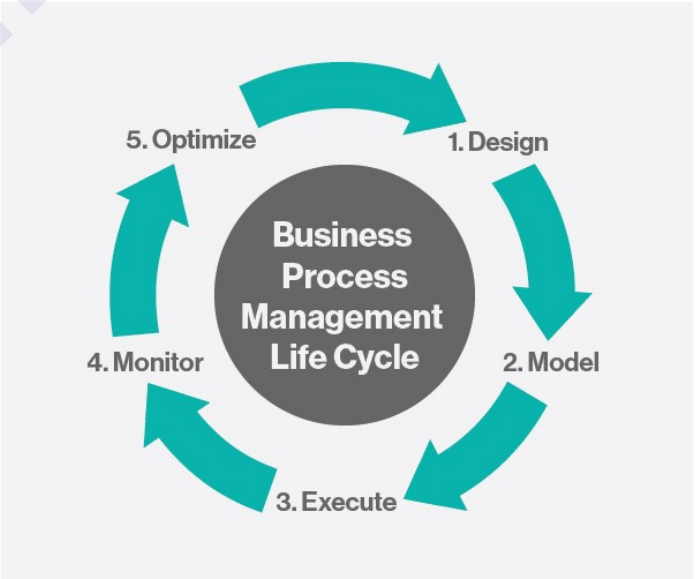
   Process once implemented, requires tracking, measuring and controlling

   Business Process Analytics are used for controlling purpose.

5. **Optimizing**

   To maintain the high level of quality and performance of its business processes

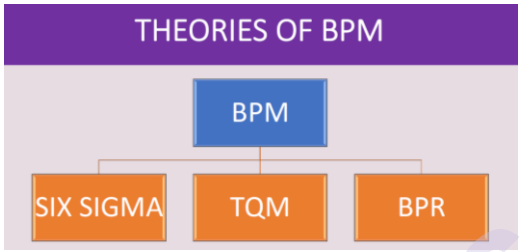
   To innovate and improve its processes primarily through redesign and reengineering



Stakeholders

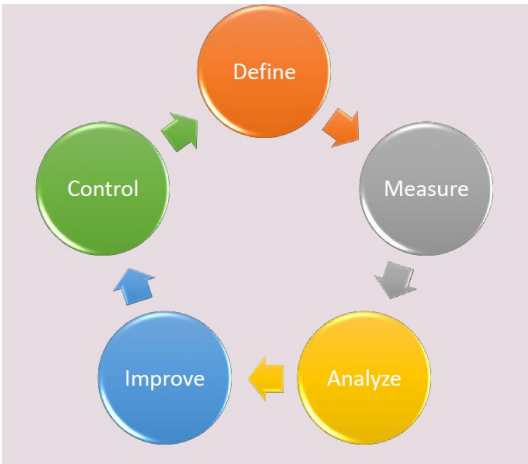
- Chief Process Officer
- Business Engineer
- Process Designer
- Process Participant
- Process Owner
- System Architect
- Developers

1.13 THEORIES OF BUSINESS MANAGEMENT PROCESS



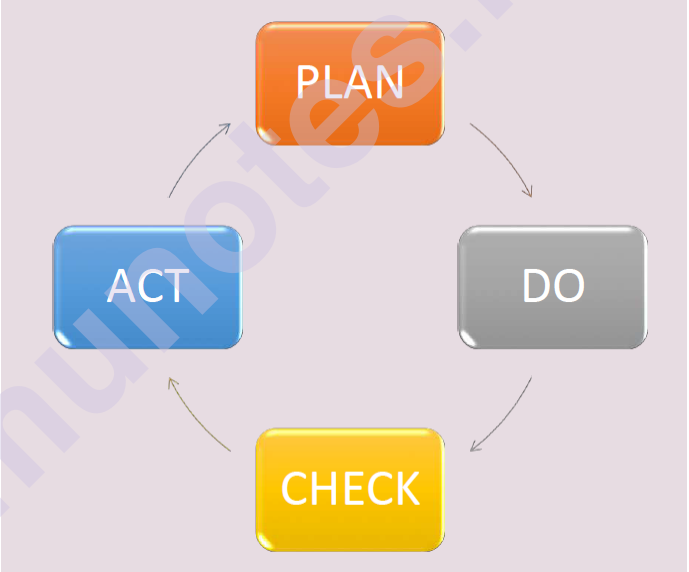
1.13.1 Six Sigma

- It is a disciplined, statistical-based, data-driven approach and continuous improvement methodology for eliminating defects in a product, process or service
- It was developed by Motorola in early 1980's by Mr. Bill Smith
- It is a set of strategies, techniques and tools for process improvement
- It seeks to improve the quality of process outputs by identifying and removing the causes of defects
- It helps an organization to reduce process cycle time, reduce pollution, reduce costs, increase customer satisfaction and increase profits
- Hundreds of companies around the world have adopted Six Sigma approach



1.13.2 Total Quality Management

- Total Quality Management (TQM) is the continuous process of detecting and reducing or eliminating errors in manufacturing, streamlining Supply Chain Management and improving customer experience by using continuous feedback
- It was developed by Mr. William Deming, a management consultant
- He was considered the most influential person in the field of the Japanese manufacturing industry
- It consists of organization-wide effort to install and make permanent climate where employees continuously improve their ability to provide on demand products and services that customers will find of particular value.
- TQM describes a management approach to long-term success through customer satisfaction
- It is a comprehensive and structured approach to organizational management that seeks to improve the quality of products and services



1.13.3 Business Process Reengineering

- It is a business management strategy, started in early 1990s
- It help organisations to fundamentally rethink how they do their work and radically restructure their organizations
- It is done in order to dramatically improve customer service, cut operational costs and become world class competitors
- Business Process Reengineering (BPR) is also known as Business Process Redesign, Business Process Transformation or Business Process Change Management

Definition of BPR

"BPR is the fundamental rethinking and radical redesign of processes to achieve dramatic improvement, in critical, contemporary measures of performance such as cost, quality, service and speed."

- Dramatic improvement means major improvements. Eg: to achieve 80-90% target, not 5-10%
- Radical redesign means BPR is reinvesting and not enhancing or improving
- Fundamental rethinking means asking the question, "Why do you do what you do?"
- Thus, BPR aims at major transformation of the business to achieve dramatic improvements

1.14 IMPLEMENTATION OF BUSINESS PROCESS MANAGEMENT

The need/importance/key-factors for implementing BPM are:

- Customer-focused approach
- Process effectiveness
- Speed of implementation of the process
- Qualify your goals beforehand
- Obtain approval from up and down the organization chart
- Select your BPM Software Carefully
- Monitor and Measure after implementation
- Don't think of BPM as a 'Project'

1.15 BENEFITS OF BUSINESS PROCESS MANAGEMENT

- Improved Business Agility – changing conditions in market
- Reduced Cost and Higher Revenue
- Higher Efficiency
- Better Visibility - real time monitor of processes
- Compliance, Safety and Security

1.16 BUSINESS PROCESS AUTOMATION

Definition

"Business Process Automation (BPA) is simply a defined way to eliminate manual, time consuming and costly tasks within an organization and replace them with automated processes that work faster while reducing redundancy in tasks and overall operating costs."

Business Process Automation – Benefits

- Elimination of repeated tasks
- Saves a lot of time
- Faster and efficient
- Customer satisfaction
- Reduce overall operating costs
- Eliminates manual errors

Business Process Automation – Challenges

- Brings fear of job cuts
- Integration of various systems can be difficult
- Automation tools may be complicated to implement
- Automation tools may be too expensive
- Needs monitoring

1.17 CASE STUDY ON SIX SIGMA THEORY-

Kindly go through the Case Study on Mumbai Dabbawala: Customer Service Excellence of Six Sigma Quality Without Technology - https://yourstory.com/2012/03/dabbawala-customer-service-excellence-of-six-sigma-quality-withouttechnology/

1.18 SUMMARY

- A business process has also been defined as a set of activities and tasks that, once completed, will accomplish an organizational goal.
- Business Process can be categorized into management processes, operational processes/primary process, and supporting/secondary business processes.
- Stakeholders are a key part of the entire business process.
- There are two level of stakeholders: Direct Stakeholders & Indirect Stakeholders
- Business Process Flow are graphical representations of your business processes. They are mostly displayed visually.
- Business Process Management (BPM) is a systematic approach to make an organization's workflow more effective, more efficient and more flexible.
- Business Process Management Suite (BPMS) is a software that enables business to model, execute, monitor and optimize their processes.

- Ten Principles of Management include – Principle of Context Awareness, Continuity, Enablement, Holism, Institutionalisation, Involvement, Joint Understanding, Purpose, Simplicity, Technology Appropriation.
- Five Phases of Lifecycle of Business Process Management – Design, Model, Execute, Monitor, Optimize.
- Theories of Business Process Management include – Six Sigma, Total Quality Management & Business Process Re-engineering (BPR).
- Six Sigma is a disciplined, statistical-based, data-driven approach and continuous improvement methodology for eliminating defects in a product, process or service.
- Total Quality Management (TQM) is the continuous process of detecting and reducing or eliminating errors in manufacturing, streamlining Supply Chain Management and improving customer experience by using continuous feedback.
- Business Process Re-engineering (BPR) is the fundamental rethinking and radical redesign of processes to achieve dramatic improvement, in critical, contemporary measures of performance such as cost, quality, service and speed.
- Business Process Automation (BPA) is simply a defined way to eliminate manual, time consuming and costly tasks within an organization and replace them with automated processes that work faster while reducing redundancy in tasks and overall operating costs.

1.19 MODEL QUESTIONS

- Explain the Business Process in Accounting and Purchase with proper flowchart.
- Explain the types of Business Process.
- Explain the challenges in Business Process.
- Explain the classification of Business Process.
- Explain the lifecycle of Business Process Management.
- List and explain the Principles of BPM.
- Explain in detail benefits of Business Process Automation (BPA).
- Explain the concept Total Quality Management (TQM) in detail.
- Explain the concept Six Sigma in detail.
- What are the benefits of Business Process Management (BPM)?
- Short note on Role of Stakeholders in BPM Lifecycle.

1.20 MCQS

1. A _____ is a set of activities and tasks to accomplish an organizational goal

   a. Business Process Flow

   b. Business Process

   c. Business Process Management

   d. Business Process Automation

2. In a business process flow for purchase, PO stands for _____

   a. Process Officer

   b. Post Office

   c. Purchase Order

   d. Purchase Officer

3. In Sales Process _____ refers to database of prospective customers

   a. Opportunity

   b. Enquiries

   c. Order

   d. Leads

4. The other name for dividend decision is _____

   a. Profit allocation decision

   b. Capital Mix decision

   c. Long term asset mix decision

   d. Short term asset mix decision

5. In a typical bank, accepting deposits from public is an example of _____

   a. Supporting Process

   b. Operational Process

   c. Management Process

   d. Secondary Process

6. Which of the following correctly identifies a stakeholder?

   a. any person who is working as an employee of the company

   b. any person who has taken loan from the company

   c. any person who has a share in the company

   d. any person who has a substantial interest and concern in our business activities

7. _____ are representations of your business processes.

   a. Business Process

   b. Business Process Flow

   c. Business Process Management

   d. Business Process Automation

8. The other name for Investment decision is _____

   a. Profit allocation decision

   b. Capital Mix decision

   c. Long term asset mix decision

   d. Short term asset mix decision

9. The other name for liquidity decision is _____

   a. Profit allocation decision

   b. Capital Mix decision

   c. Long term asset mix decision

   d. Short term asset mix decision

10. Workplace safety is an example of _____

    a. Supporting Process

    b. Operational Process

    c. Management Process

    d. Primary Process

❄❄❄❄❄❄❄

2

COMPUTERIZED ACCOUNTING SYSTEM

Unit Structure :

2.0 Objectives

- To understand the need of Computerised Accounting System.
- To understand the advantages and limitations of Computerised Accounting System.
- To understand various accounting softwares used in the market.
- To understand basic functionality of Tally ERP 9

2.1 INTRODUCTION

A computerised accounting system is an accounting information system that processes the financial transactions and events as per Generally Accepted Accounting Principles (GAAP) to produce reports as per user requirements. Every accounting system, manual or computerised, has two aspects. First, it has to work under a set of well-defined concepts called accounting principles. Another, that there is a user -defined framework for maintenance of records and generation of reports. In a computerised accounting system, the framework of storage and processing of data is called operating environment that consists of hardware as well as software in which the accounting system, works. The type of the accounting system used determines the operating environment. Both hardware and software are interdependent. The type of software determines the structure of the hardware. Further, the selection of hardware is dependent upon various factors such as the number of users, level of secrecy and the nature of various activities of functional departments in an organisation.

Modern computerised accounting systems are based on the concept of database. A database is implemented using a database management system, which is define by a set of computer programmes (or software) that manage and organise data effectively and provide access to the stored data by the application programmes. The accounting database is well-organised with active interface that uses accounting application programs and reporting system.

2.2 COMPARISON BETWEEN MANUAL AND COMPUTERISED ACCOUNTING

Accounting, by definition, is the process of identifying, recording, classifying and summarising financial transactions to produce the financial reports for their ultimate analysis. Let us understand these activities in the context of manual and computerised accounting system.

- Identifying: The identification of transactions, based on application of accounting principles is, common to both manual and computerised accounting system.
- Recording: The recording of financial transactions, in manual accounting system is through books of original entries while the data content of such transactions is stored in a well-designed accounting database in computerised accounting system.
- Classification: In a manual accounting system, transactions recorded in the books of original entry are further classified by posting into ledger accounts. This results in transaction data duplicity. In computerised accounting, no such data duplication is made to cause classification of transactions. In order to produce ledger accounts, the stored transaction data is processed to appear as classified so that the same is presented in the form of a report. Different forms of the same transaction data are made available for being presented in various reports.
- Summarising: The transactions are summarised to produce trial balance in manual accounting system by ascertaining the balances of various accounts. As a result, preparation of ledger accounts becomes a pre-requisite for preparing the trial balance. However, in computerised accounting, the originally stored transactions data are processed to churn out the list of balances of various accounts to be finally shown in the trial balance report. The generation of ledger accounts is not a necessary condition for producing trial balance in a computerised accounting system.
- Adjusting Entries: In a manual accounting system, these entries are made to adhere to the principle of cost matching revenue. These entries are recorded to match the expenses of the accounting period with the revenues generated by them. Some other adjusting entries may be made as part of errors and rectification. However, in computerised accounting, Journal vouchers are prepared and stored to follow the principle of cost matching revenue, but there is nothing like passing adjusting entries for errors and rectification, except for rectifying an error of principle by having recorded a wrong voucher such as using payment voucher for a receipt transaction.
- Financial Statements: In a manual system of accounting, the preparation of financial statements pre-supposes the availability of trial balance. However, in computerised accounting, there is no such requirement. The generation of financial statements is independent of

producing the trial balance because such statements can be prepared by direct processing of originally stored transaction data.

- Closing the Books: After the preparation of financial reports, the accountants make preparations for the next accounting period. This is achieved by posting of closing and reversing journal entries. In computerised accounting, there is year-end processing to create and store opening balances of accounts in database. It may be observed that conceptually, the accounting process is identical regardless of the technology used.

2.3 ADVANTAGES OF COMPUTERISED ACCOUNTING SYSTEM

Computerised accounting offers several advantages vis-a-vis manual accounting, these are summarised as follows;

- Speed : Accounting data is processed faster by using a computerised accounting system than it is achieved through manual efforts. This is because computers require far less time than human beings in performing a task.

- Accuracy : The possibility of error is eliminated in a computerised accounting system because the primary accounting data is entered once for all the subsequent usage and processes in preparing the accounting reports. Normally, accounting errors in a manual accounting system occur because of repeated posting of same set of original data by several times while preparing different types of accounting reports.

- Reliability : The computer system is well-adapted to performing repetitive operations. They are immune to tiredness, boredom or fatigue. As a result, computers are highly reliable compared to human beings. Since computerised accounting system relies heavily on computers, they are relatively more reliable than manual accounting systems.

- Up-to-Date Information : The accounting records, in a computerised accounting system are updated automatically as and when accounting data is entered and stored. Therefore, latest information pertaining to accounts get reflected when accounting reports are produced and printed. For example, when accounting data pertaining to a transaction regarding cash purchase of goods is entered and stored, the cash account, purchase account and also the financial statements (trading and profit and loss account) reflect the impact immediately.

- Real Time User Interface : Most of the automated accounting systems are inter-linked through a network of computers. This facilitates the availability of information to various users at the same time on a real time basis (that is spontaneously).

- Automated Document Production : Most of the computerised accounting systems have standardised, user defined format of accounting reports that are generated automatically. The accounting reports such as Cash book, Trial balance, Statement of accounts are obtained just by click of a mouse in a computerised accounting environment.

- Scalability : In a computerised accounting system, the requirement of additional manpower is confined to data entry operators for storing additional vouchers. The additional cost of processing additional transactions is almost negligible. As a result the computerised accounting systems are highly scalable.

- Legibility : The data displayed on computer monitor is legible. This is because the characters (alphabets, numerals, etc.) are type written using standard fonts. This helps in avoiding errors caused by untidy written figures in a manual accounting system.

- Efficiency : The computer based accounting systems ensure better use of resources and time. This brings about efficiency in generating decisions, useful informations and reports.

- Quality Reports : The inbuilt checks and untouchable features of data handling facilitate hygienic and true accounting reports that are highly objective and can be relied upon.

- MIS Reports : The computerised accounting system facilitates the real time production of management information reports, which will help management to monitor and control the business effectively. Debtors' analysis would indicate the possibilities of defaults (or bad debts) and also concentration of debt and its impact on the balance sheet. For example, if the company has a policy of restricting the credit sales by a fixed amount to a given party, the information is available on the computer system immediately when every voucher is entered through the data entry form. However, it takes time when it comes to a manual accounting system. Besides, the results may not be accurate.

- Storage and Retrieval : The computerised accounting system allows the users to store data in a manner that does not require a large amount of physical space. This is because the accounting data is stored in hard-disks, CD-ROMs, floppies that occupy a fraction of physical space compared to books of accounts in the form of ledger, journal and other accounting registers. Besides, the system permits fast and accurate retrieval of data and information.

2.4 LIMITATIONS OF COMPUTERISED ACCOUNTING SYSTEM

The main limitations emerge out of the environment in which the computerised accounting system is made to operate. These limitations are as given below ;

- Cost of Training : The sophisticated computerised accounting packages generally require specialised staff personnel. As a result, a huge training costs are incurred to understand the use of hardware and software on a continuous basis because newer types of hardware and software are acquired to ensure efficient and effective use of computerised accounting systems.

- Staff Opposition : Whenever the accounting system is computerised, there is a significant degree of resistance from the existing accounting staff, partly because of the fear that they shall be made redundant and largely because of the perception that they shall be less important to the organisation.

- Disruption : The accounting processes suffer a significant loss of work time when an organisation switches over to the computerised accounting system. This is due to changes in the working environment that requires accounting staff to adapt to new systems and procedures.

- System Failure : The danger of the system crashing due to hardware failures and the subsequent loss of work is a serious limitation of computerised accounting system. However, providing for back-up arrangements can obviate this limitation. Software damage and failure may occur due to attacks by viruses. This is of particular relevance to accounting systems that extensively use Internet facility for their online operations. No full-proof solutions are available as of now to tackle the menace of attacks on software by viruses.

- Inability to Check Unanticipated Errors : Since the computers lack capability to judge, they cannot detect unanticipated errors as human beings commit. This is because the software to detect and check errors is a set of programmes for known and anticipated errors.

- Breaches of Security : Computer related crimes are difficult to detect as any alteration of data may go unnoticed. The alteration of records in a manual accounting system is easily detected by first sight. Fraud and embezzlement are usually committed on a computerised accounting system by alteration of data or programmes. Hacking of passwords or user rights may change the accounting records. This is achieved by tapping telecommunications lines, wire-tapping or decoding of programmes. Also, the people responsible for tampering of data cannot be located which in a manual system is relatively easier to detect.

- Ill-effects on Health : The extensive use of computers systems may lead to development of various health problems: bad backs, eyestrain, muscular pains, etc. This affects adversely the working efficiency of accounting staff on one hand and increased medical expenditure on such staff on the other.

2.5 SOURCING OF ACCOUNTING SOFTWARE

Accounting software is an integral part of the computerised accounting system. An important factor to be considered before acquiring accounting software is the accounting expertise of people responsible in organisation for accounting work. People, not computers, are responsible for accounting. The need for accounting software arises in two situations : (a) when the computerised accounting system is implemented to replace the manual system or (b) when the current computerised system needs to be replaced with a new one in view of changing needs.

2.6 ACCOUNTING PACKAGES

Every Computerised Accounting System is implemented to perform the accounting activity (recording and storing of accounting data) and generate reports as per the requirements of the user. From this perspective. The accounting packages are classified into the following categories :

a) Ready to use

b) Customised

c) Tailored

Each of these categories offers distinctive features. However, the choice of the accounting software would depend upon the suitability to the organisation especially in terms of accounting needs.

a) Ready-to-Use

Ready-to-Use accounting software is suited to organisations running small/ conventional business where the frequency or volume of accounting transactions is very low. This is because the cost of installation is generally low and number of users is limited. Ready-to-use software is relatively easier to learn and people (accountant) adaptability is very high. This also implies that level of secrecy is relatively low and the software is prone to data frauds. The training needs are simple and sometimes the vendor (supplier of software) offers the training on the software free. However, these software offer little scope of linking to other information systems.

b) Customised

Accounting software may be customised to meet the special requirement of the user. Standardised accounting software available in the market may not suit or fulfil the user requirements. For example, standardised accounting software may contain the sales voucher and inventory status as separate options. However, when the user requires that inventory status to be updated immediately upon entry of sales voucher and report be printed, the software needs to be customised.

Customised software is suited for large and medium businesses and can be linked to the other information systems. The cost of installation and maintenance is relatively high because the high cost is to be paid to the vendor for customisation. The customisation includes modification and

addition to the software contents, provision for the specified number of users and their authentication, etc. Secrecy of data and software can be better maintained in customised software. Since the need to train the software users is important, the training costs are therefore high.

c) Tailored

The accounting software is generally tailored in large business organisations with multi users and geographically scattered locations. These software requires specialised training to the users. The tailored software is designed to meet the specific requirements of the users and form an important part of the organisational MIS. The secrecy and authenticity checks are robust in such softwares and they offer high flexibility in terms of number of users.

2.7 ACCOUNTING SOFTWARE

Accounting Software is a software program that records business transactions and processes transactions within functional modules and provides the necessary information. It functions as an information accounting system.

Accounting software makes it easy to keep book accounts. It is done in a few ways, including software that lets a man keep his books unfamiliar with accounting rules.

Software that allows small to large companies to keep accounts simple by storing and tracking on their own. And relieving the accounting department from tedious work.

Another way is to help evaluate account data for better and more efficient decisions and alert them to incorrect decisions or pitfalls.

2.8 BENEFITS OF USING ACCOUNTING SOFTWARE:

The importance of accounting software at the moment is enormous. Without it, you cannot think of running a business. The **benefits** of it cannot be over-written. The key importance of accounting software is given below.

1. Speeding up the information recovery process.
2. Adding flexibility in the bank reconciliation process,
3. Automatically planning Value Added TAX (VAT)/Goods and Services TAX (GST)
4. Save time and minimize errors
5. Provide Computerized Invoice, Money Receipts
6. Provide Cash flow Statement and profitability report
7. Remove business complexity and,
8. perhaps most significantly, offering an ability to see the financial status of the business in real-time.

2.9 TYPES OF ACCOUNTING SOFTWARE

- Personal accounting: Personal accounting software is mainly aimed at home consumers, facilitating accounts payable-type accounting activities, handling budgets, and simple account reconciliation at the market's cheap end.
- Low-end market: Cheap application software allows most general business accounting functions to be performed at the low end of the business markets. Suppliers often serve a single domestic market, while larger suppliers provide separate solutions in each national market. Some products have major functionalities but are not considered compatible with GAAP or IFRS / FASB. Some low-end systems have neither sufficient safety nor audit trails.
- Mid-market: The mid-market covers a wide range of business software that can meet multiple national accounting standards needs and enable multi-currency accounting. The applications may provide integrated or add-on management information systems in addition to general accounting functions, and may be geared towards one or more markets, for example with integrated or add-on accounting modules for projects.
- High-end market: The most complex and expensive business accounting software is often part of a vast suite of software often referred to as enterprise resource planning (ERP) software. These frameworks usually have a very long time of implementation, sometimes in excess of six months. These systems are often simply a collection of functions that require substantial integration, configuration, and modification to even begin to resemble an accounting system. The benefit of a high-end solution is that such solutions are designed to support different processes for individual businesses because they are extremely scalable and can be customized to the exact company requirements. This typically comes at a considerable expense in terms of both resources and time to implement.
- Hybrid Solutions: As technology is evolving, software vendors were able to sell ever more sophisticated applications at lower prices. This platform supports businesses at various growth levels. Even small businesses require many of the features of mid-market and high-end software as they open multiple locations or grow in size. Furthermore, with more and more businesses moving overseas or enabling workers to take up their home office, many smaller clients need to coordinate several locations. Their choices are to hire software-as-a-service or other programs that offer similar connectivity over the internet from different locations.
- Software as a Service (SaaS) accounting software: With the advent of faster computers and internet access, accounting software providers were able to build accounting software that was paid for at a monthly recurring charge rather than a higher upfront licensing fee (SaaS). The pace at which this new business model was implemented has gradually risen to the point that legacy players were pressured to come out with their own online versions.

2.10 MODULES OF ACCOUNTING SOFTWARE

These are core modules:

- Accounts receivables
- Accounts payable
- General ledger
- Assets
- Billing
- Inventory
- Purchase order
- Sales order
- Bank book
- Cash book etc.

These are non-core modules:

- Debt collection or outstanding,
- Payment performance,
- Expenses,
- Payroll
- Journals
- Reports etc.

2.11 LIST OF ACCOUNTING SOFTWARE

There is a lot of accounting software in the world and the number is increasing day by day.

Accounting software may be developed at home or may be purchased from a third party. Most technology companies in the world offer different business accounting solutions, such as their design, sector, and category.

Most local and global accounting software is used for accounting purposes in business industries.

Here is the list of fifty (50) accounting software trends in the business industries below.

Fresh Books	Vyapar	Crunch Accounting	Saasu	HostBooks Accounting
Quick Books	ART	Accounting Xpert	Fiskl	One Book
Xero	WinTeam	GnuCash	Cashflow Manager	Power Book
Accounting by Wave	Ledger Lite	Close Management Software	Invoice Quickly	OneStep accounting
SAP S/4 Hana for Finance	SlickPie	Clear Books	Tally	Gusto
Deltek Vission	Manager	Passport Business Solutions	AccountsIQ	Zoho Books
DEAR Systems	Invoice2go	FundView General Ledger	NextGen	Pandle
Deltek Cost Point	Receipt Bank	Focus9	Easy Accounttax	UAS
Oracle Financials Cloud	My Boss	Dolibarr	XLedger	BuildSmart
Sage Business Cloud Accounting	Activity HD	Fund E-Z	Quick File	Invoice Quickly

2.12 INTRODUCTION TO TALLY ERP 9

Tally is an ERP accounting software package used for recording day to day business data of a company. The latest version of Tally is Tally Prime.

Tally ERP 9 Software is one acclaimed financial accounting system and inventory management system with power computer.

Tally ERP 9 is one best accounting software that can integrated with other business applications such as Sales, finance, Purchasing, Payroll, Inventory, etc.

Tally software stores all the business transactions of each account in detail. Tally ERP 9 follows double entry accounting system and hence eliminates and rectifies possible errors.

2.13 FEATURES OF TALLY ERP 9

1. Tally ERP 9 supports multi languages, so it is called as multi-lingual tally software. Accounts can be maintained in one language and reports can be viewed in another language.
2. You can create and maintain accounts up to 99,999 companies.
3. Using payroll feature, you can automate employee records management.
4. Tally has feature of synchronization, the transactions maintained in multiple locations offices can be automatically updated.
5. Generate consolidated financial statements as per requirements of company.
6. Managing single and multiple groups are very important features of tally.

2.14 ADVANTAGES OF TALLY ERP 9

1. Tally ERP 9 software is a low cost of ownership and it can be easily implement and customize.
2. Supports multi operating systems such as Windows & Linux and can be installed on multiple systems.
3. Tally software utilizes very low space for installation and the installation of tally is an easy method.
4. It is built in back up and restore, so the user can easily backup all companies data in a single directory, in a local system disk.
5. Supports all types of protocols such as HTTP, HTTPS, FTP, SMTP, ODBC, etc.
6. Supports multi languages including 9 Indian language. The data can be entered in one language and you can generate invoices, Po's, delivery notes, etc. in other language.

How to Buy Tally ERP 9?

Step by step guide how to buy tally license for business.

1. First, visit the official website of Tally Solutions i.e. https://tallysolutions.com.
2. Click on Buy Now option from menu.

3. If you want license for country India only, choose the option I want the license for India or for Internal license choose option as International.
4. To check the prices as per country, choose the country name.
5. Now you will have three options to buy tally.
   a. Choose “New License” to buy new tally license
   b. To upgrade or renewal of Tally license, choose the option “Renewal / Upgrade.
   c. For rental of tally license, choose the option rental and time period i.e. 1 Month or 3 Months or Annual.
6. After choosing the required license, click on Buy Now
7. Enter the required billing details and choose the mode of payment.
8. Agree the policy and click on proceed to payment.
9. Now enter the payment credential and make the payment for Tally license.

Note: For Renewal / Upgrade, you need to existing serial number of Tally license.

2.15 DOWNLOAD AND INSTALL TALLY ERP 9 SOFTWARE

Download latest version of Tally ERP 9 with GST (version 6.6.3). The downloading and installation of Tally ERP 9 software is an easy method and fast.

Tally Solutions offers various products to download for practice and business (requires licence). With trial version you can try Tally for free of cost. It offers the following products.

1. Tally.ERP
2. Tally.Server
3. Shoper
4. Tally.Developer and
5. Adds on for GST

How to download Tally ERP 9 Software

Refer below steps to download Tally ERP 9 software

1. Tally ERP 9 software can be downloaded from the official website of Tally Solutions i.e. https://tallysolutions.com
2. Choose the option downloads from the Menu
3. Choose the option Tally.ERP 9

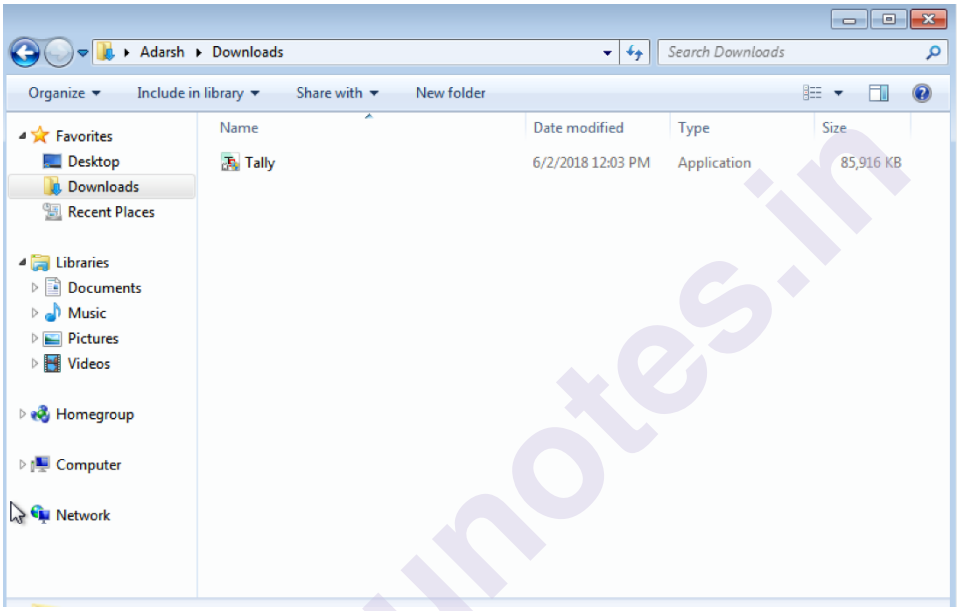
4. Now download the latest version of Tally.ERP 9 by choosing the option Install now or Download for later

5. By choosing the option – Install Now enables to install the Tally through online

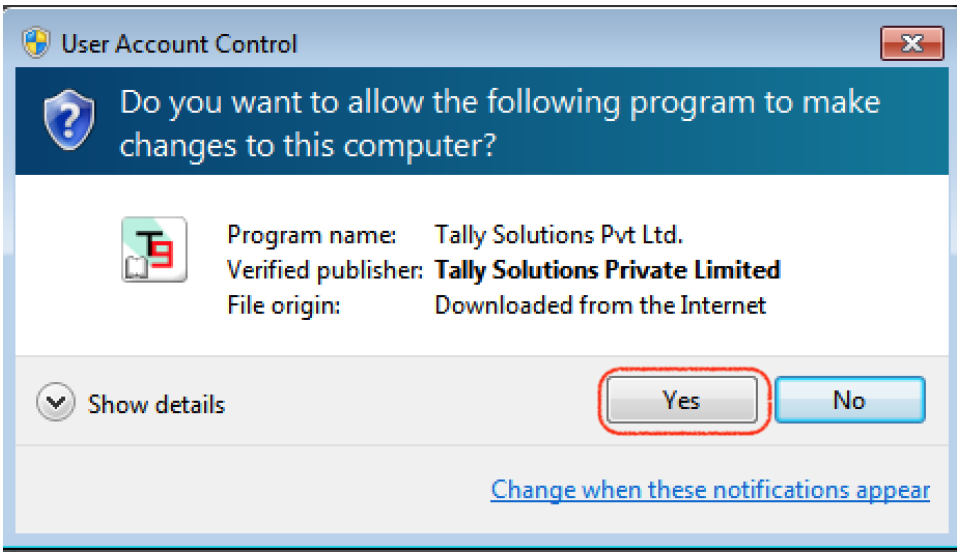
6. By choosing the option Download for Later enables to download the Tally software into your system and install using the customizing settings.

After downloading the latest version software of Tally ERP 9, you need to perform the following installation steps.

1. Go to the folder, where the Tally software has been download on your computer



2. Double click on the Tally application icon to install on your system. Now a user account control panel windows opens with the options "YES" or "NO" to allow the program to make changes to this computer. Click on "YES" option.



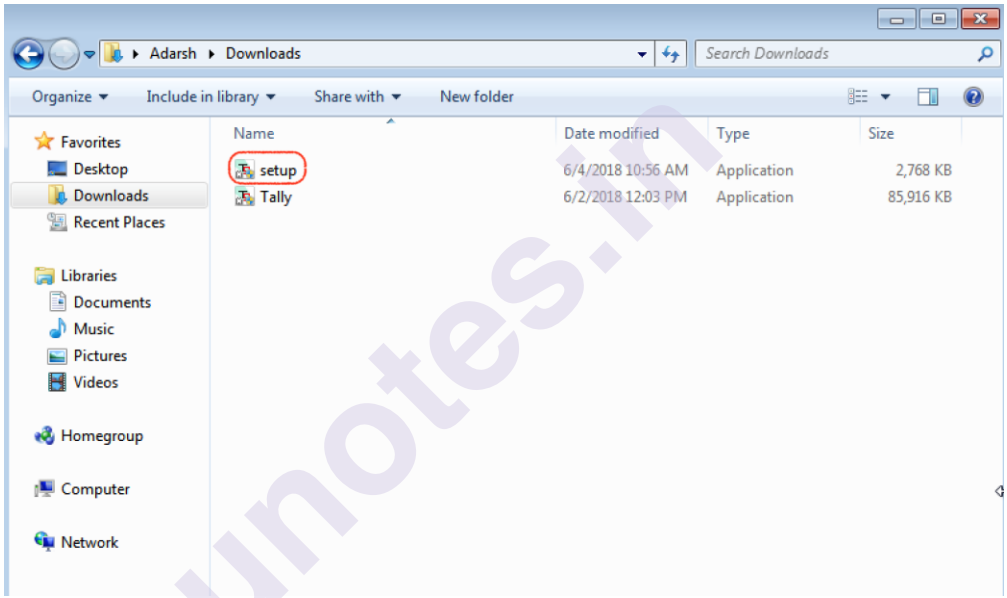
3. Choose the installation folder and click on instal

4. And install the Tally.ERP 9 on your computer.

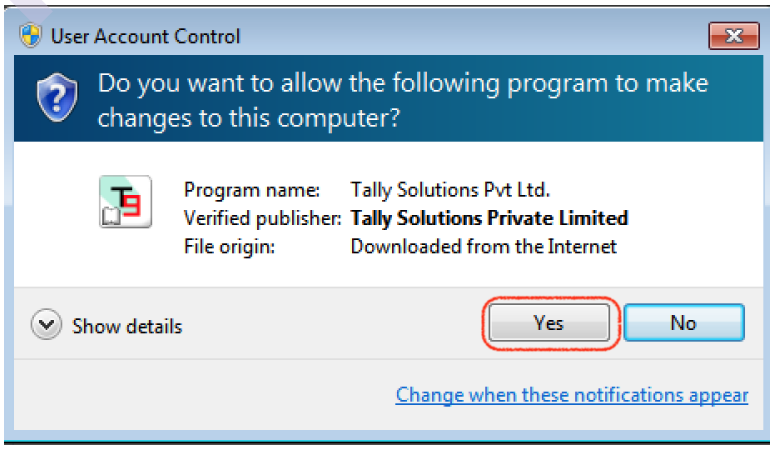
Installing Tally ERP using Install Now / Online Installer

If you get any errors while installing the Tally ERP application with the downloaded software, you can try installation through online by choosing the option Install Now.

5. Setup application will be download on your system, open the downloaded folder and double click on setup icon.

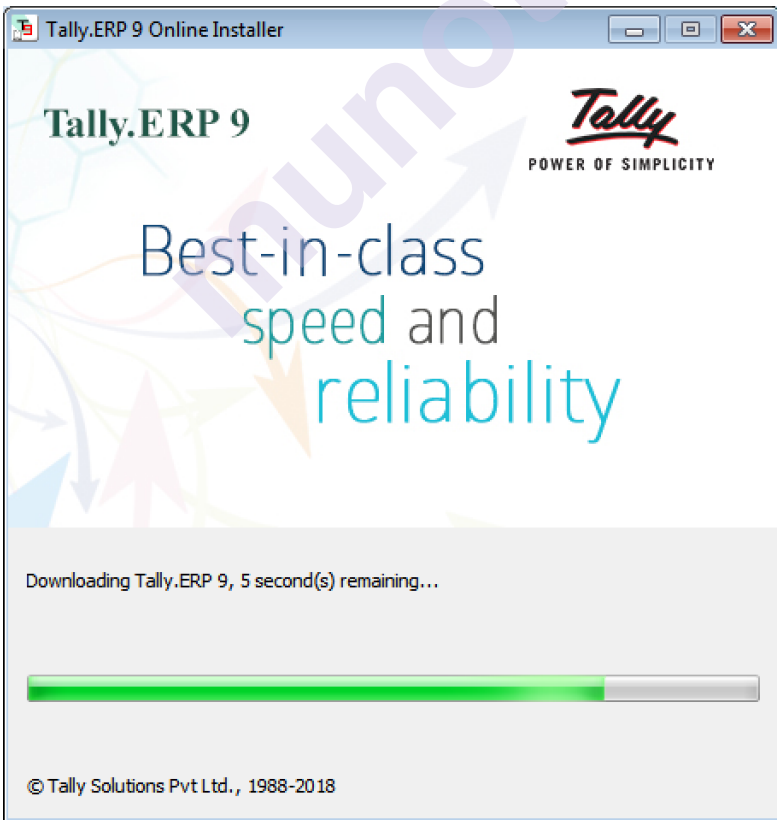


6. Next User Account Control windows displays on the screen, choose Yes option to continue.



7. Now click on install option.

8. Now you will get a status bar of downloaded Tally software and will be installed on your system automatically.



9. After installation of Tally, a message will be displayed as ” You have successfully Installed Tally.ERP 9 series with version.

Successfully Tally ERP 9 Software has been installed on Windows Computer.

Start Tally ERP 9 Software on Computer

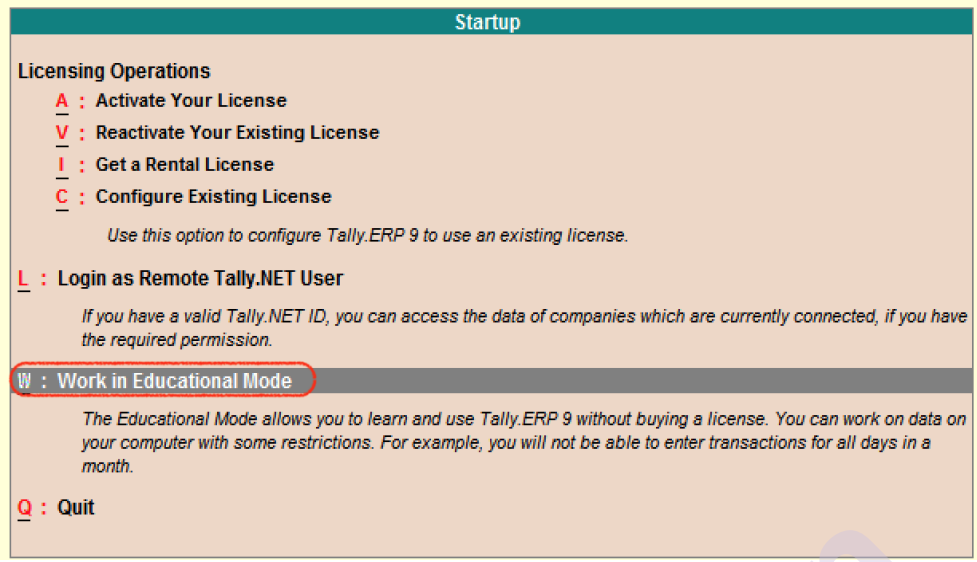
After successfully installation of Tally ERP 9 on Windows or Mac computer, you can start Tally ERP 9 by using one of the following methods.

- Double click on Tally ERP 9 icon from computer desktop or

The startup screen appears with the options

1. **Licensing Operations** : To activate your licence, press A from your keyword and enter
2. **Login as remote Tally.Net user** : If you valid Tally.Net User id and password of a company connected, you can login as remotely.
3. **Work in Education Mode** : Use Work in education mode for practice purpose. This mode allows to work with tally without buying the license with some restrictions.
4. **Quite** : Click on Quite option to close the Tally.

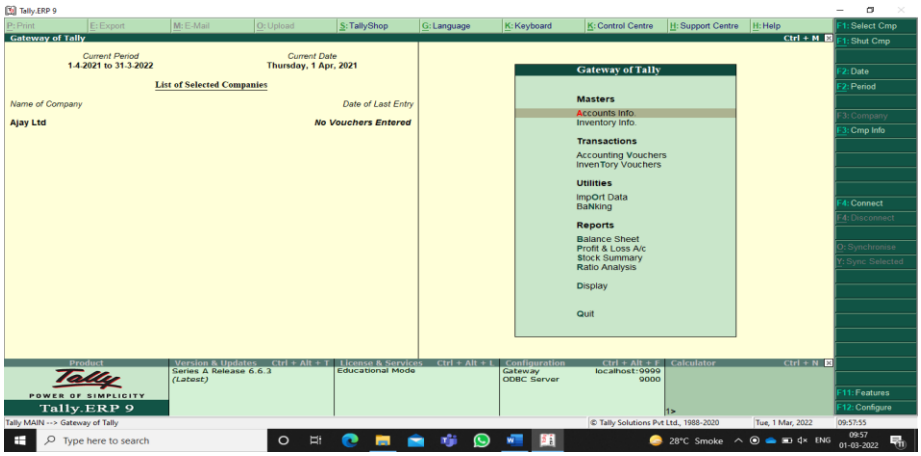
Here we are using Tally ERP 9 software for educational practice purpose, so we choose the option work in education mode.



Note: If you are using Tally for business purpose, you should purchase the licence and activate using the purchased license key.

After log in to Tally, the welcome screen of Tally ERP 9 power of simplicity displays on the system.

After loading the Tally.ERP 9 software on your system, the gateway of tally displays on the screen.



From this screen you are allowed to work with the Tally ERP 9.

How to Close/ Quit Tally ERP 9

After you work with Tally ERP 9, you can quit Tally ERP 9 screen, but you need to close all the screen before shut down the Tally.

To quit Tally ERP 9, you can use any of the following method.

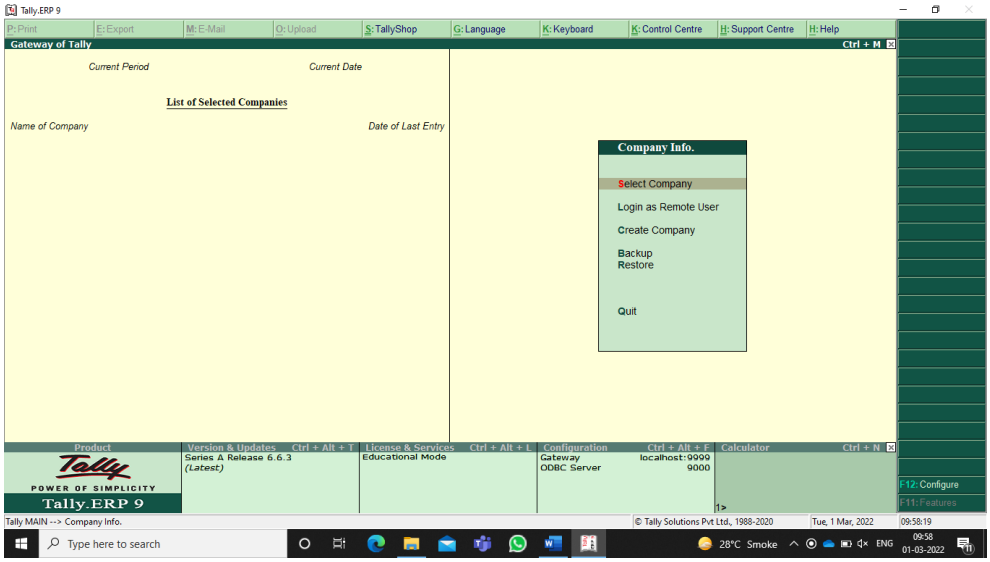
- Press ESC key from your keyword until you see the confirmation message QUIT: YES/ NO, Press Y from your keyword to Quit Tally ERP 9.
- You can quit Tally.ERP 9 without confirmation message by pressing Ctrl+Q buttons from Gateway of Tally.

Alternatively click on quit option which is available on right top menu.

2.16 TALLY ERP 9 SCREEN COMPONENTS

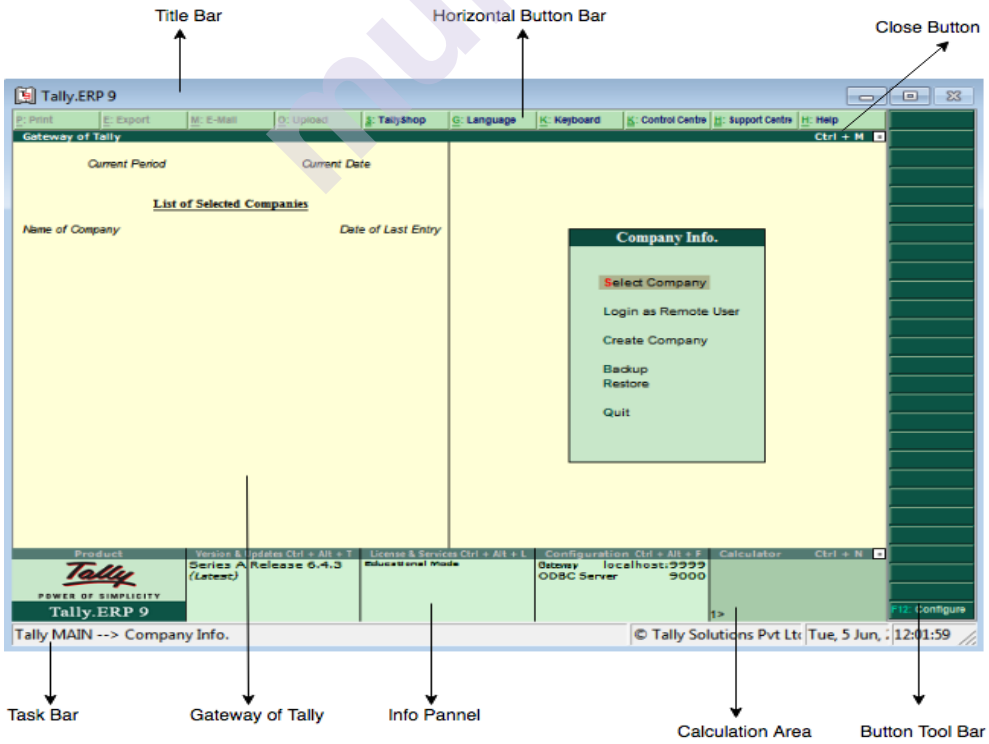
After you start the Tally ERP 9 Application, the welcome home screen of Tally ERP 9 – Power of Simplicity displays on the screen during the Tally software loading on compute system.

After loading the Tally software, the Tally ERP.9 startup screen displays on the screen as shown below.



The home screen of Tally ERP 9 contains the following components

1. Title Bar
2. Horizontal Button Bar
3. Close Button
4. Gateway of Tally
5. Buttons Toolbar
6. Calculator area
7. Info Panel
8. Data and Time



Complete details of Tally Screen Components

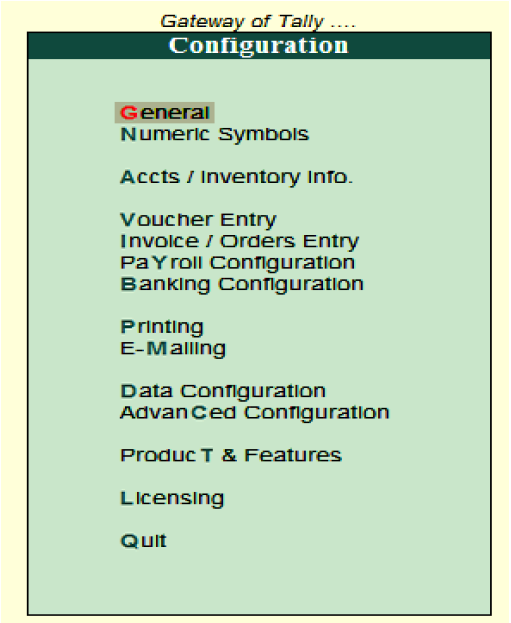
- **Title Bar:** It displays the Tally software that you are using.
- **Horizontal Button Bar:** It helps to choose Language, Keyboard settings, Control centre, support centre and Help.
- **Close Button:** By click on this button or Ctrl+M, tally window closes
- **Task Bar**: Displays the task of Tally ERP 9
- **Gateway of Tally:** It displays menu, screen, reports
- **Info Panel**: Information panel displays the tally version, license details and configuration details
- **Calculation Area**: Calculation area will be used for calculation functions.
- **Buttons Tool Bar:** It displays the buttons that enables for immediate interaction with Tally ERP 9. It displays only the buttons that are applicable to the current task.
- **Date and Time**: Displays current data and time.

2.17 CONFIGURATIONS IN TALLY ERP 9

The F12: Configuration in Tally.ERP 9 is applicable for all the companies that located in Tally.ERP 9 data directory. The F12: Configurations may vary from menu to menu, for example if you press F12: Configuration from voucher screen the respective screen displays on the screen.

How open Configurations in Tally ERP 9

Gateway of Tally –> Press function key **F12** or click on **F12: Configure**



The configuration screen contains multiple settings that helps to configure the required information for master creation, voucher entry, banking, printing, etc. The important settings that available on configurations screen are

- General
- Numeric Symbols
- Accts/ Inventory info
- Voucher entry
- Invoices / Orders entry
- Payroll Configuration
- Banking Configuration
- Printing
- E-mail
- Data configuration
- Advanced configuration
- Product T & Features
- Licensing

General: Under General configuration screen, you can configure the details of country, name style, format of dates, format of number, Table configuration, Import/export configuration and other options.

Numerical Symbols: Numerical symbols contains configurations of

- Symbols to use for positive numbers
- Symbols to use for negative numbers
- Symbols to use for debit amount
- Symbols to use for credit amount

Accts/ Inventory Info: Accounts and Inventory information contains the configuration details of

- Master data
- Accounts and
- Inventory

Voucher Entry: Voucher entry contains the configuration details of

- Accounts
- Inventory
- Statutory

Invoice / Order Entry: Invoice and order entry contains the configuration details of voucher entry for

- Accounts
- Inventory
- Statutory

Payroll Configuration: Payroll configuration contains the details of

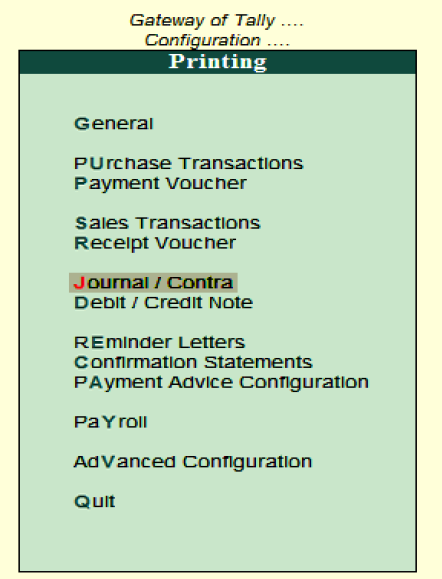
- Add notes for employees
- Show statutory details
- Provide passport and visa details
- Provide contract details
- Show resigned/retired employees
- Show employee display name

Banking Configuration: It contains the configuration details of

- Show all reconciled transactions in BRS till date
- Remove bank date on altering reconciled voucher
- Location of new bank statements
- Location of imported bank statements
- Location of payment instructions
- Show details before export/upload
- Allow reset on the upload transactions
- Location of new intermediate files
- Location of imported intermediate files

Printing: This configuration helps to configure the printing screens for

- Purchase transaction
- Payment Vouchers
- Sales transactions
- Receipt Vouchers
- Journal / Contra
- Debit / Credit note
- Reminding letters
- Confirmation statements
- Payment advice configuration
- Payroll
- Advanced configurations



E-Mail: This configuration helps to setup the e-mail server of company.

Data configuration: This configuration helps to define

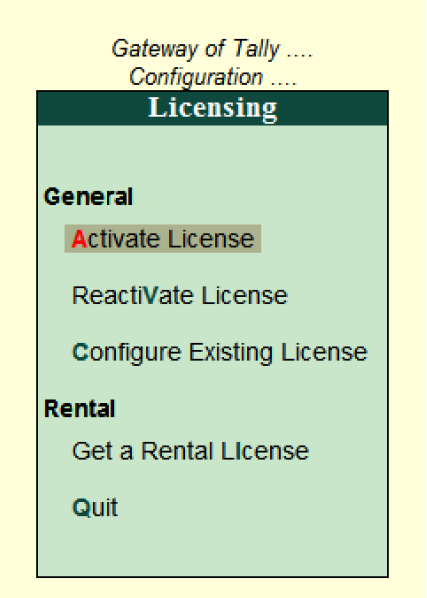
- Location of data files
- Location of export files
- Load companies on start up
- Select companies to preload on startup
- Location of language file
- Location of configuration file

Advanced Configuration: This configuration helps to define the client / server configuration such as

- Tally.ERP 9 acting as
- Enable OBDC server
- Port number
- Connection Configurations
- Log Configuration
- Tally.server 9 configuration
- Tally.Net server proxy configuration
- Gateway proxy configuration

Licensing: This configuration helps to update the details of Tally license

- Activate License
- Reactivate License
- Configure existing License
- Get a Rental License



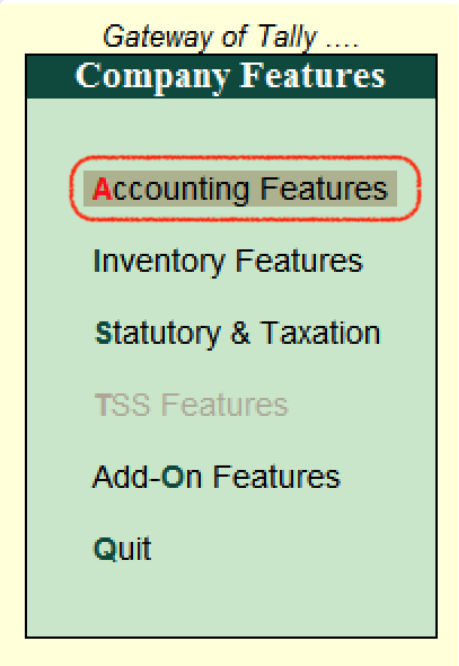
After configuring all the required details, restart the Tally application to reflect the settings based on the updated configurations in Tally.

2.18 FEATURES IN TALLY ERP 9

2.18.1 Accounting Features in Tally (F1: Accounts)

What are accounting Features in Tally

Accounting features in Tally is one of the important category of company features that consists of several configurations and functionalities used for accounting transactions and reports. Accounting features can be opened by pressing function key F11 or click on the option F11: Features (available at button toolbar)



Accounting features is further divided in to 6 sections,

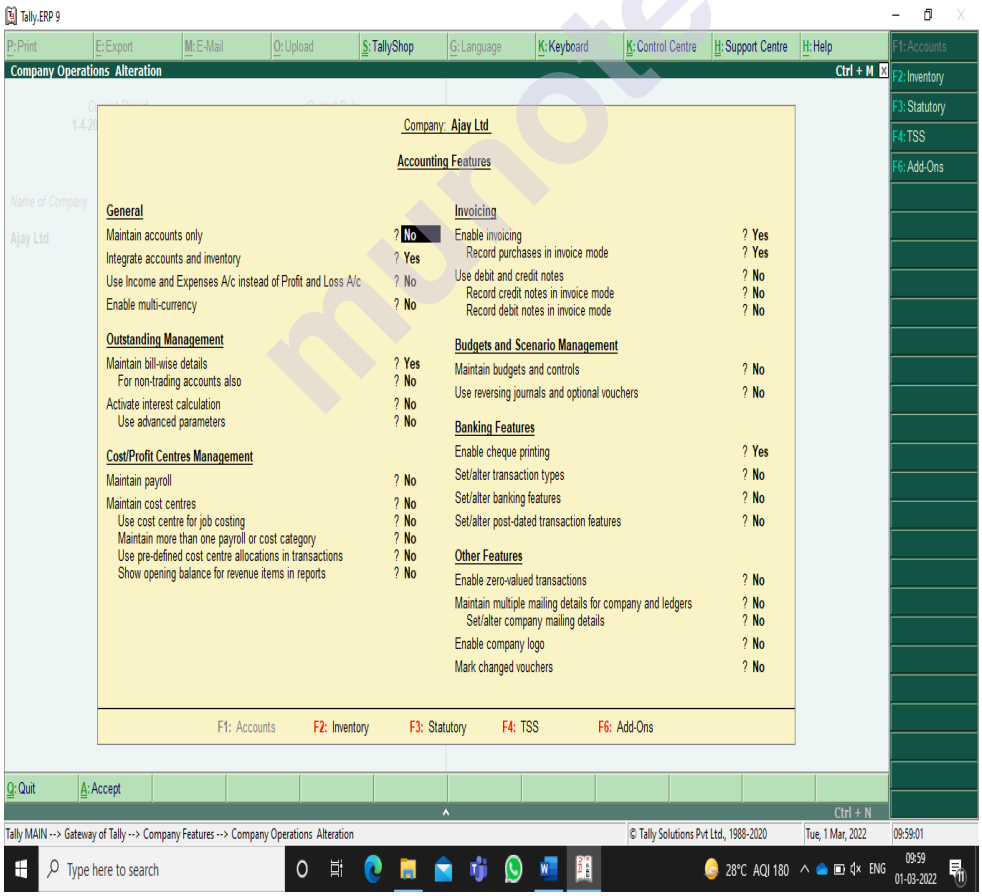
1. General
2. Outstanding Management
3. Cost/ Profit Centre Management
4. Invoicing
5. Budgets/ Scenarios Management
6. Other Features

How to open Accounting Features

To open accounting features in Tally ERP 9, use any one of the following method.

- Path: Tally Main > Gateway of Tally > F11: Features > Accounting Features
- Function key: F1: Accounts (Press function key F1 from your keyword)

The following screen displays after executing the accounting features in Tally



On company Operations Alteration screen, update the following details.

General

- Maintain Accounts Only: Choose this option, if you are maintaining inventory transactions
- Integrate accounts and inventory: Choose Yes option to include stock or inventory balances from inventory records.
- Use income and expense a/c instead of profit & loss a/c: Choose this option to display the income and expenses accounts as menu instead of profit & loss account.
- Enable Multi Currency: Choose this option to work company with multi currencies.

Outstanding Management

- Maintain bill-wise details:
    - For non trading accounts also:
- Activate interest calculation:
    - Use advanced parameters:

Cost / Profit centre management

- Maintain Payroll:
- Maintain cost centres:
    - User cost centre of job costing:
    - More than one payroll/cost category:
    - Use predefined cost centres allocation in transactions:
    - Show opening balance for revenue items in reports:

Invoicing

- Enable Invoicing
    - Record purchases in invoice mode
- Use debit and credit notes
    - Record credit notes in invoice mode
    - Record debit notes in invoice mode

Budgets and Scenarios Management

- Maintain budgets and control
- Use reversing journals and optional vouchers

Banking

- Enable cheque printing
- Set/alter transaction type
- Set/alter banking features
- Set/alter post dated transaction features

Other Features

- Enabled zero valued transactions
- Maintain multiple mailing details for company and ledgers
- Enable company logo
- Mark changed vouchers

After enabling all the required accounting features for company, press enter or ctrl + A to save the configured details in Tally ERP 9.

2.18.2 Inventory Features in Tally (F2: Inventory)

Inventory Features in Tally ERP 9

Inventory features in Tally consists configurations / functions related to inventory transactions and reports.

Inventory features in tally are furthered sub-divided into 7 functions, such as

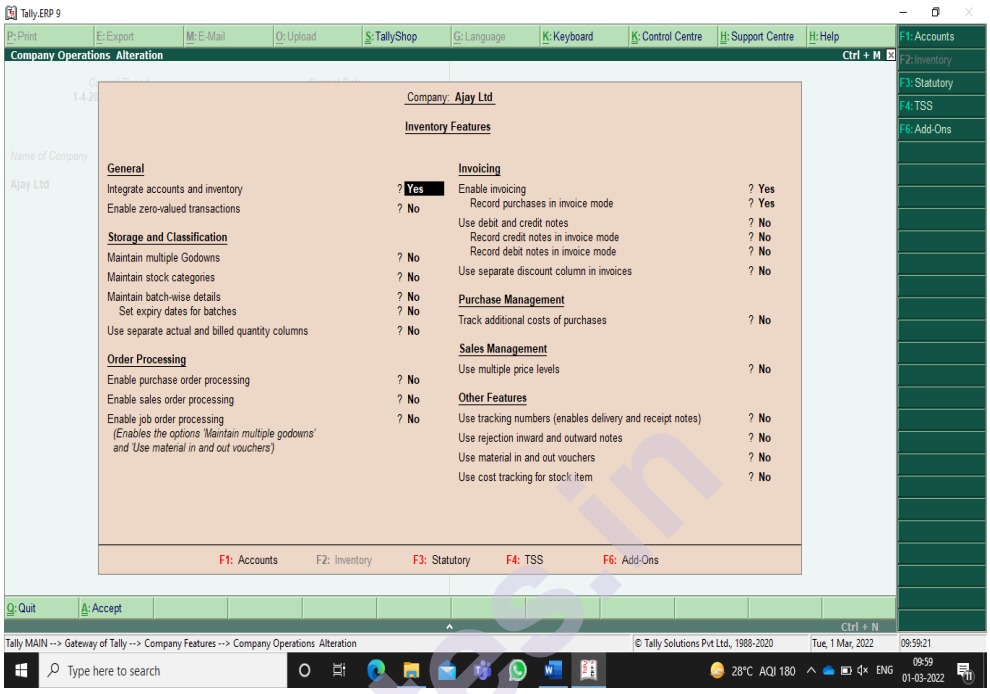
1. General
2. Storage and Classification
3. Order processing
4. Invoicing
5. Purchase Management
6. Sales Management
7. Other features

How to start inventory features in Tally ERP 9

- Path: Tally Main –> Gateway of Tally –> F11: Features –> Company Features –> Inventory Features or click on F2: Inventory.

How to enable inventory features in Tally ERP 9

By using inventory features, you enable or disable the options for day to day business transactions. The following screen displays after executing the inventory features.



On company alteration screen, update the following details

General

- Integrate accounts and inventory: Choose this option as Yes to include stock or inventory balances in inventory records.
- Enable zero value transactions: Choose this options as Yes to allow the zero value transactions.

Storage and classification

- Maintain multiple godowns: Enable this option if you have more than one storage location and godowns for storing the materials.
- Maintain stock categories: Enable this to define or maintain stock categories
- Maintain batch wise details: Enable this option to maintain batch wise details for stock items
    - Set expiry dates for batches : Enable this option for maintaining expire dates for batches
- Use separate actual and billed quantity columns

Order Processing

- Enable purchase order processing : Enable this option to define purchase orders
- Enable sales order processing: Enable this option to define sales orders
- Enable job order processing: Enable this option to define job orders.

Invoicing

- Enable Invoicing:
  - Record purchases in invoice mode
- Use debit and credit notes
  - Record credit notes in invoice mode
  - Record debit notes in invoice mode
- Use separate discount column in invoices

Purchase Management

- Track additional costs of purchases

Sales management

- Use multiple price levels

Other Features

- Use tracking numbers (enables delivery and receipt notes)
- Use rejection inward and outward notes
- Use material in and out vouchers
- Use cost tracking for stock item
- After enabled or disabled the features, choose A: Accept or press ctrl+ A to save the details.

2.18.3 Statutory & Taxation in Tally (F3: Statutory)

The statutory & taxation company features consists configuration and functions related to statutory compliance for company in Tally ERP 9. The statutory features are related to country specific and depends upon country during the company creation in Tally.ERP 9.

The following are the features that are available for statutory and taxation

- Goods and Service Tax (GST)
- Excise
- Value Added Tax (VAT)

- Tax deducted at Source (TDS)
- Tax collected at source

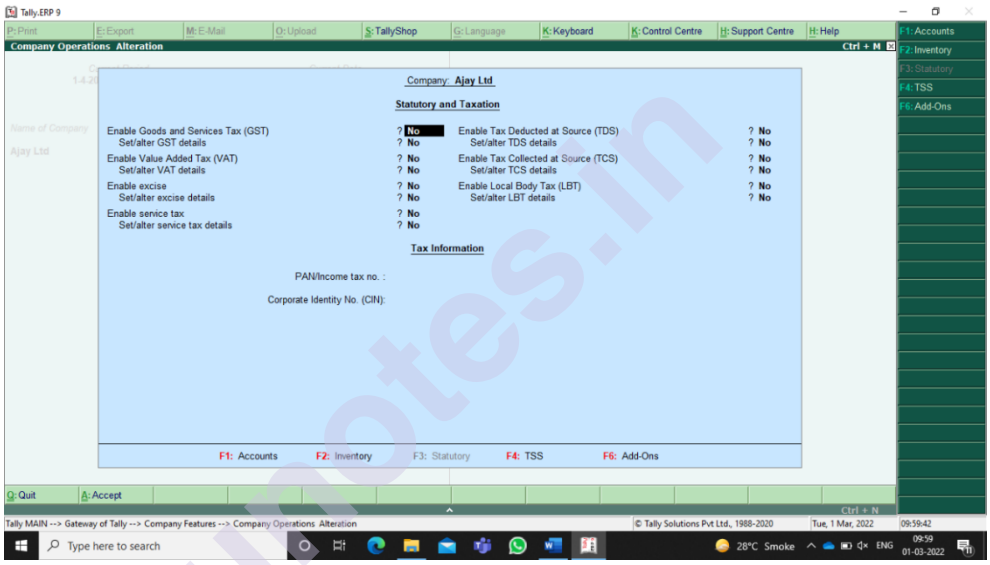
From the Version of Tally.ERP 9, the Tally supports various taxation in India including GST.

How to enable Statutory & Taxation Features

You can use Statutory and Taxation features in Tally by enabling and disabling options in the company alteration screen.

Follow the path and open statutory and taxation.

Gateway of Tally –> F11: Features –> Company Features –> Statutory Taxation or press function key F3



From the screen company operation alteration – update the following details.

- **Enable Goods and Services Tax (GST)**: Enable GST option to use GST tax for company
    - Set/alter GST details: Enable this option to change the GST details.
- **Enable Value Added Tax (Vat):** Country India is now following GST tax, so disable this option as company is following GST tax.
    - Set/Alter VAT details: Choose this options as No
- **Enable Excise:** Enable this option to use the Excise
    - Set/alter excise details: Enable this option to change the excise details
- **Enable Service Tax**: Enable this option to use the service tax by company

- Set/alter service tax details: Enable this option only to alter the service tax details

- **Enable Tax deduction at Source:** Enable this option to use TDS
  - Set/alter TDS details

- **Enable Tax collected at Source:** Enable this option to use TCS
  - Set/alter TCS details

Tax Information:

- PAN/Income Tax No: Update the company permanent account number (PAN) / Income tax number in this field.

- Corporate Identify No: Update the company CIN number in this field.

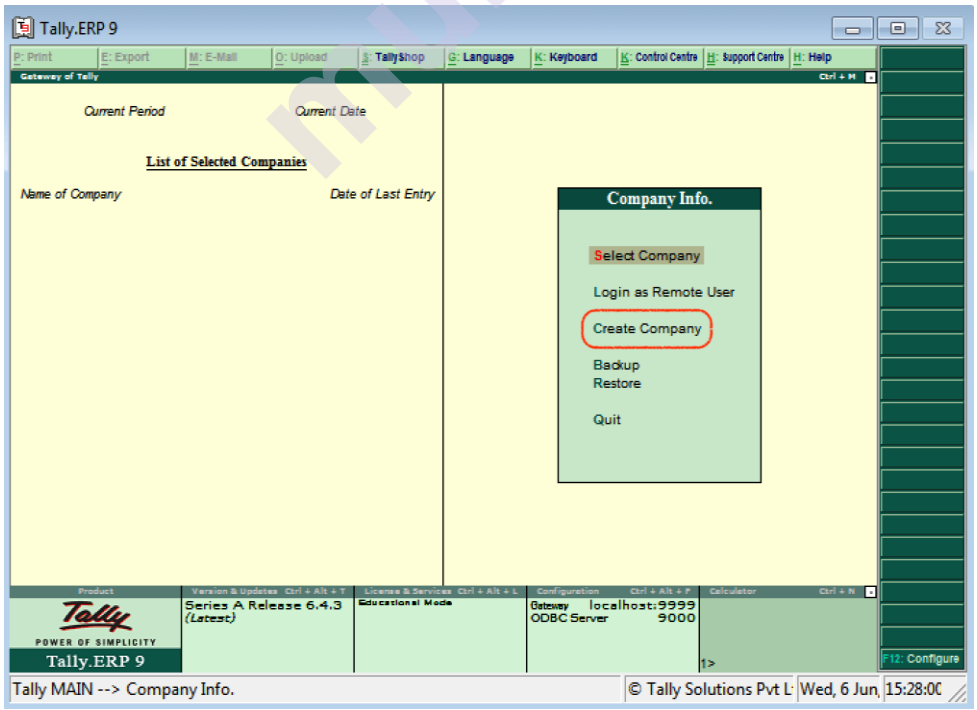
After updating all the required details for statutory and taxation, choose A: Accept to save the details.

2.19 CREATE, ALTER, DELETE & SHUT COMPANY IN TALLY ERP 9

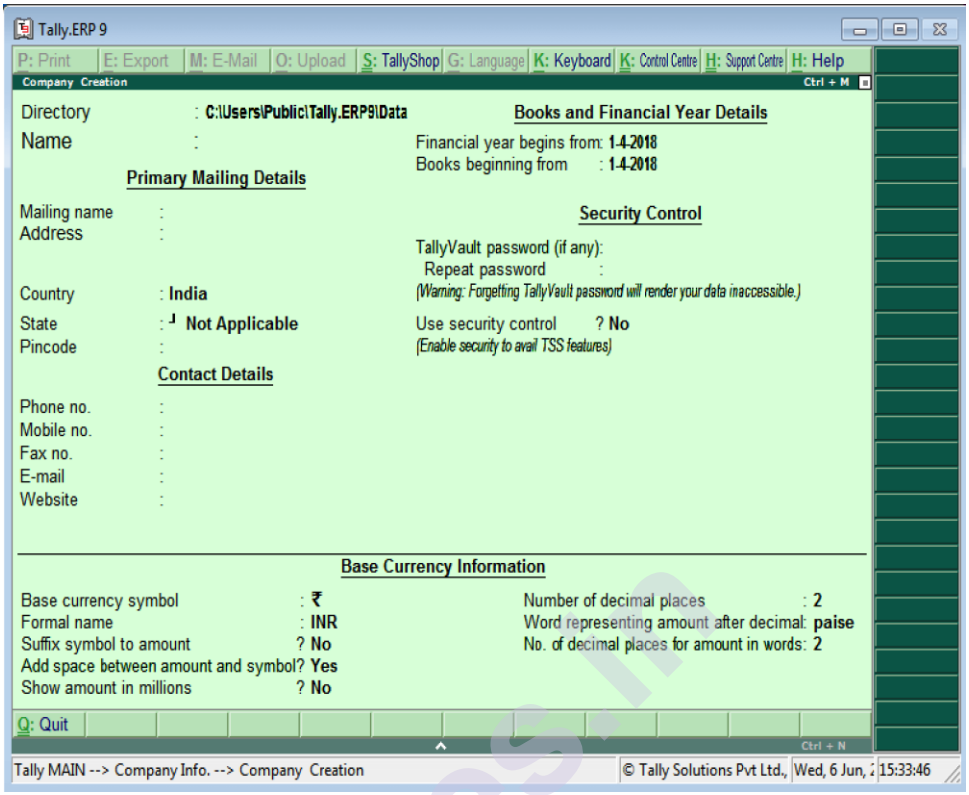
How to create company in Tally ERP 9?

Step 1: In tally, after login double click on the create company option under company information. The following navigation path is used to create the company in Tally:

Gateway of Tally → Company Info → Create Company



Step 2: The following screen displays the company creation window:



Note: Use the Arrow key, Tab key, Mouse, or Enter key to navigate between the fields in Tally.

Step 3: Enter the "Company's Mailing Name". This is an important field because it shows all the printouts.

Step 4: Enter the "Company's Full Address". This is shown on all printouts. Thus it is an important field.

Step 5: Choose the "Name of the Country" as India from the given countries list.

Step 6: Choose the "State" from the given list of states.

Step 7: Update the "Company's Pin Code", where it is located.

Step 8: Update the "Telephone Number"/ landline of the company.

Step 9: Update the "E-Mail id" and "Website" of the company.

Step 10: Update the financial year starting date of the company. In India, the financial year of the company starts on 1st April and ends on 31st March.

Step 11: Update the date from which accounting is allowed in Tally. Generally, this date and the starting date of the financial year are the same. But if the company has been formed on any other date of the year, that date will be mentioned.

For example: If books have been set to begin from 1-Dec 2019, the Tally will not allow the entries for the 1-April-2019 to 30-Nov-2019.

Step 12: If we want to use TallyVault, enter a password. It is a secure feature that encrypts data.

Note: we have to use this feature very carefully. If we forget the password, it may be impossible to recover the data. We can permanently lose the data.

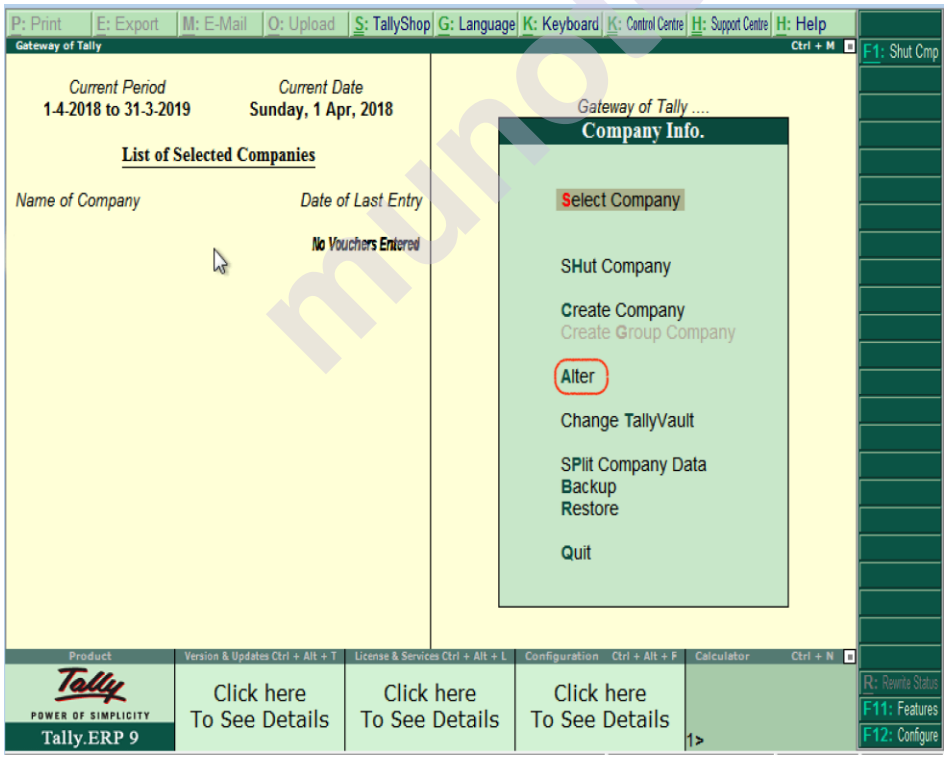
Step 13: Repeat the password of TallyVault. Tally ERP matches this password with the previously entered password to ensure that the password we typed previously was the intended password, which means there is no typing error.

Here the bar indicates the password strength. Strong passwords indicate with a green bar. A strong password is better.

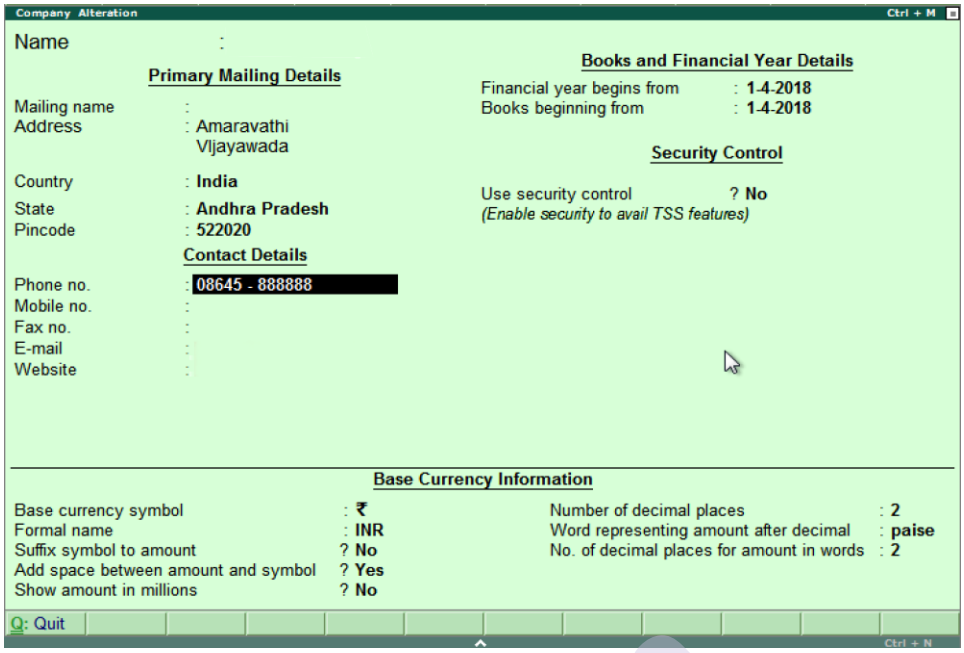
How to alter company in Tally ERP 9?

After creation of company in tally, the given company information can be alter/ modify/ change as per requirements.

Step 1: To Alter company in Tally: **Gateway of Tally > Press Alt+F3 > Alter**



Step 2: Under list of companies, choose the company name to alter.



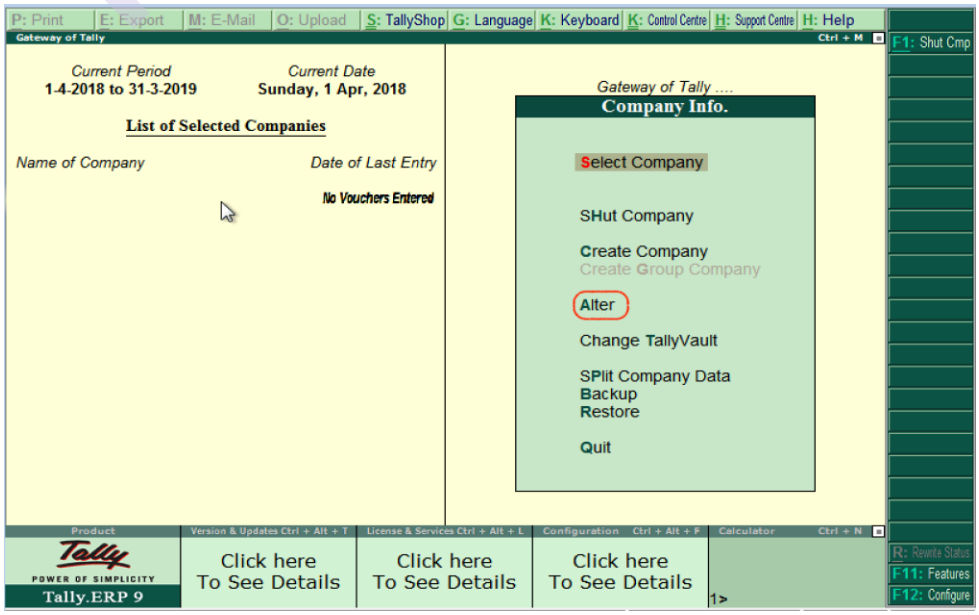
Step 3: On company alteration screen, add and modify the required details and use Ctrl+ A options to save the details. Here we have added contact details of phone number.

How to delete company in Tally ERP 9?

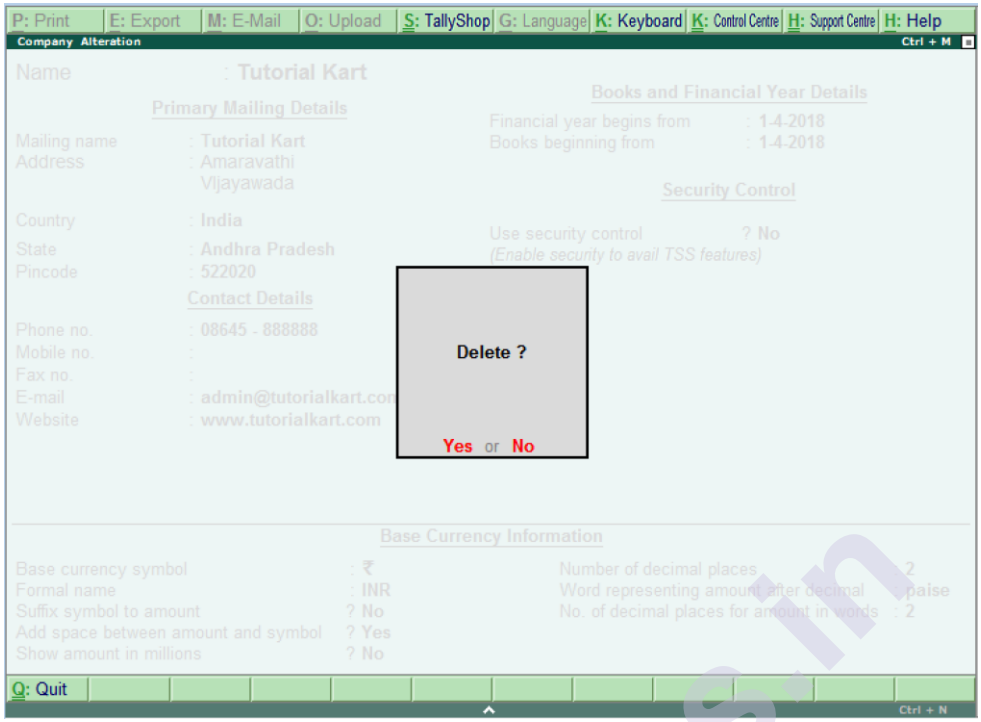
If you delate company in Tally, it removes the complete information of company from Hard drive, all the files and directories that are associated with company will be deleted permanently and it cannot be reversed.

To delete company in Tally ERP 9: **Gateway of Tally > Alt+F3 > Alter > Alt+D**.

Step 1: After using Alt+F3 keys, the company information screen displays on the screen. Here the delete option will be not available. Click on alter option.



Step 2: Now selection company and click Alt+D and click on YES option to delete the company in Tally ERP 9.



How to shut company in Tally ERP 9?

Shut a company in tally does not mean that delete a company, it means close. After you work with company, press Alt+F1 if you choose more than one company or choose Quit button to close the present company.

2.20 ACCOUNTING MASTERS IN TALLY ERP 9

2.20.1 Groups

Groups are the main classification of ledger accounts in Tally. They are the heads of accounts. There are total 28 groups in Tally, out of which 15 are primary groups and 13 are sub-groups.

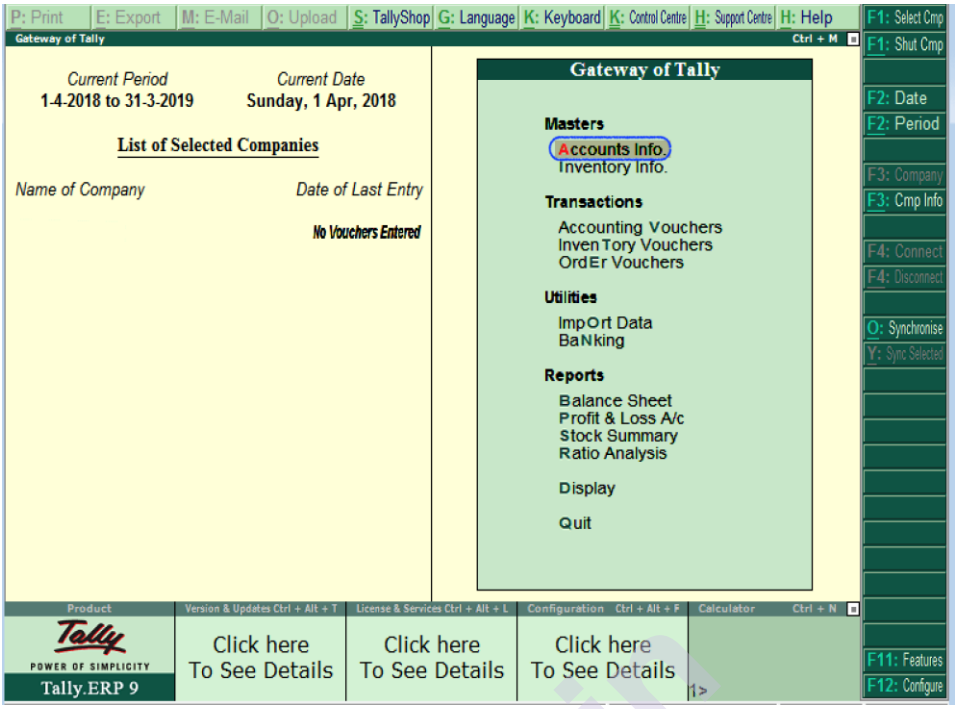
How to Create Groups in Tally?

In Tally ERP 9, maintain the following Sundry Debtors Ledgers Accounts:

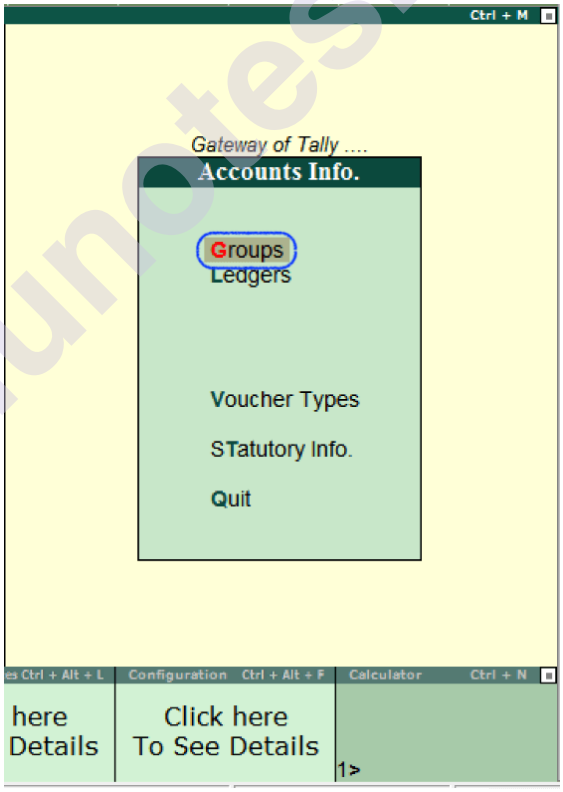
Main Group: North India Debtors Group and South India Debtors Group under Sundry Debtors

Sub-Group: Tech solutions grouped and ABC limited under North India Debtors. Hyderabad Debtors, Bangalore debtors, Vijayawada debtors under South India Debtors.

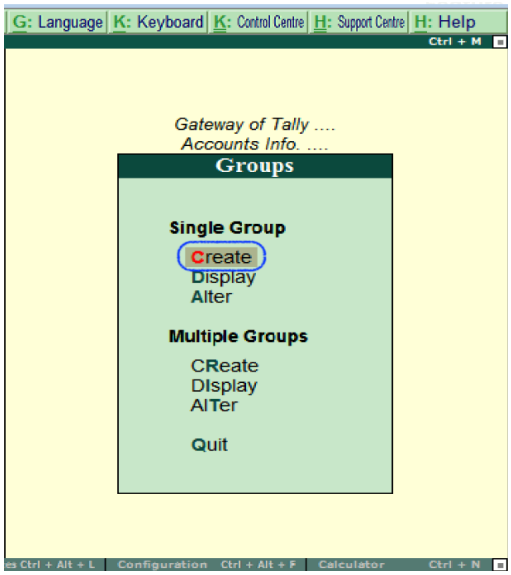
Step 1: In this step, go to the Gateway of Tally and then click on Accounts Info.



Step 2: Choose the option Groups under Accounts Info.



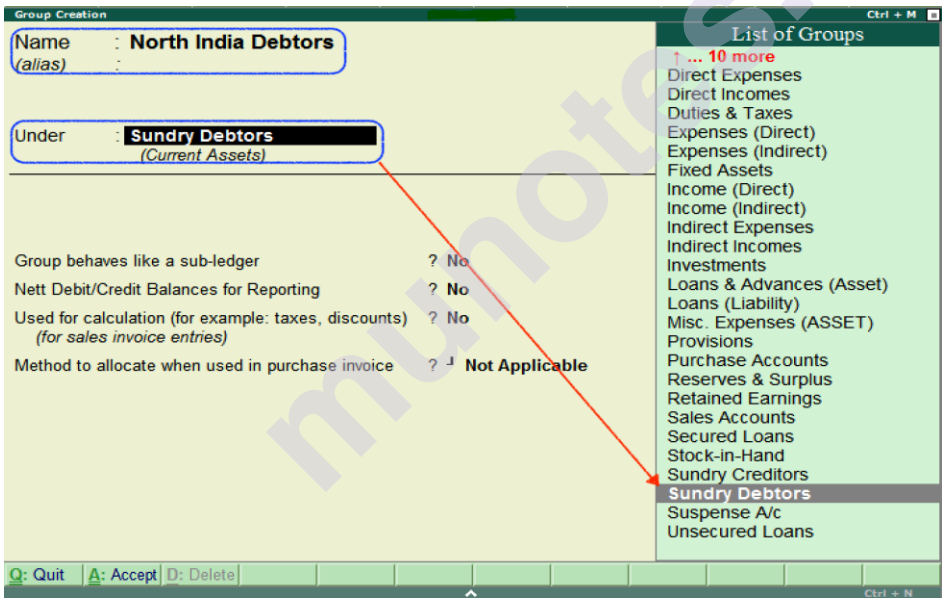
Step 3: In Tally ERP 9, choose the option Create under Single Group Menu to create a single group.



Step 4: Update the following details on the Group creation screen:

Name: Specify the name of the group and then press enter to continue.

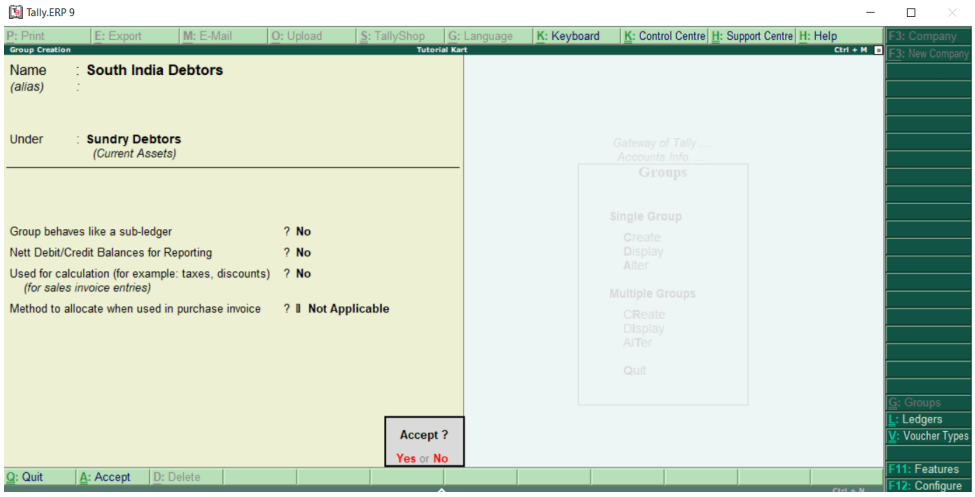
Under: Under List of Groups, choose the group name as Sundry debtors.



After entering the required details, press Ctrl+A: Accept or press enter to save the details.

Also, create other Groups using the above procedure

- South India debtors under Sundry Debtors
- Hyderabad Debtors, Bangalore debtors, and Vijayawada debtors under South India Debtors.
- Tech Solutions or ABC limited under Bangalore Debtors.



Tally is used to create any number of groups under all default groups. Here we have created two groups under Sundry i.e., North India Debtors and South India Debtors. Under South India Debtors, three sub-groups (Hyderabad Debtors, Bangalore debtors, Vijayawada debtors) created.

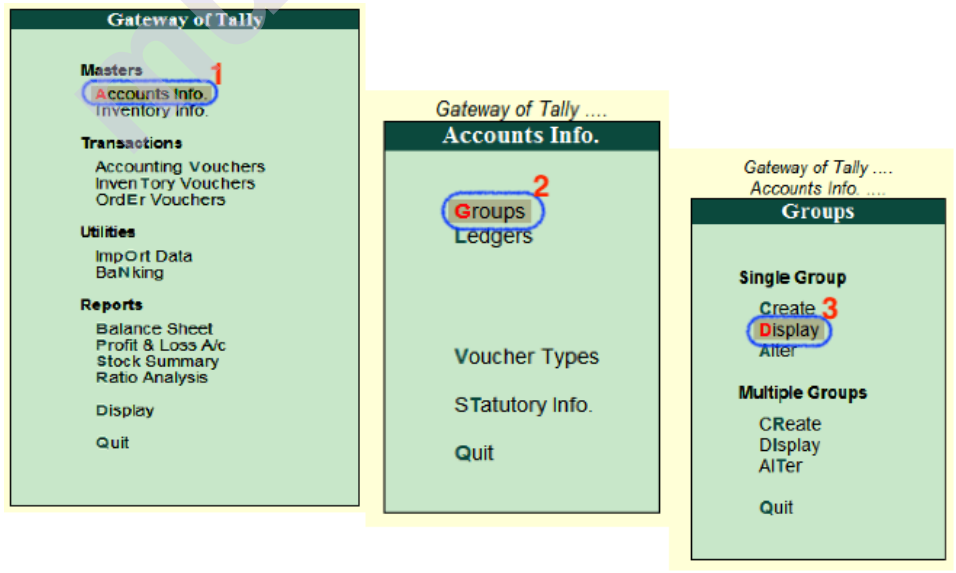
How to Display Group in Tally?

In Tally ERP 9, after creating the group, we can display all the created groups in detail. However, users are not allowed to edit/alter the data in display mode.

Step 1: Use the following path to display groups in Tally

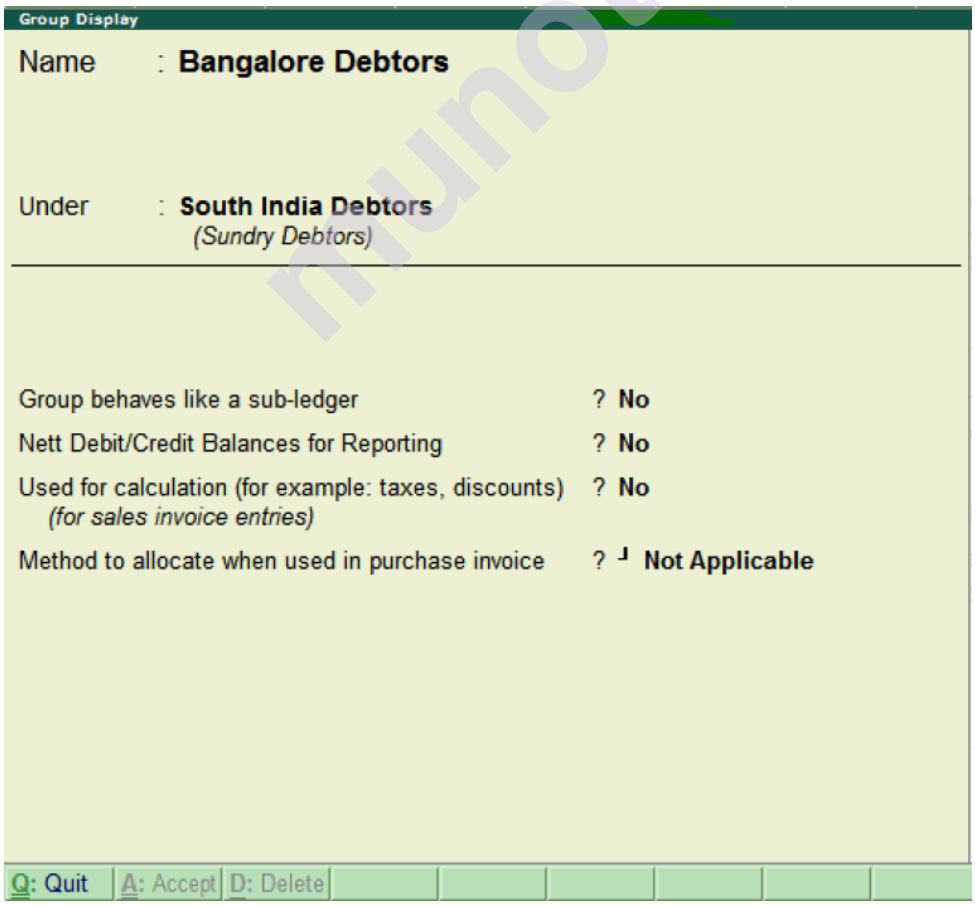
Gateway of Tally → Accounts Info → Groups

Step 2: Under Single Group, click on the option display to display groups in Tally.



Step 3: Choose the required group name under List of Groups name and then click on that particular group to display on the screen as follows:

Step 4: Now the ledger (Bangalore Debtors) display on the screen as:



Step 5: To close the screen, click on Q: Quit.

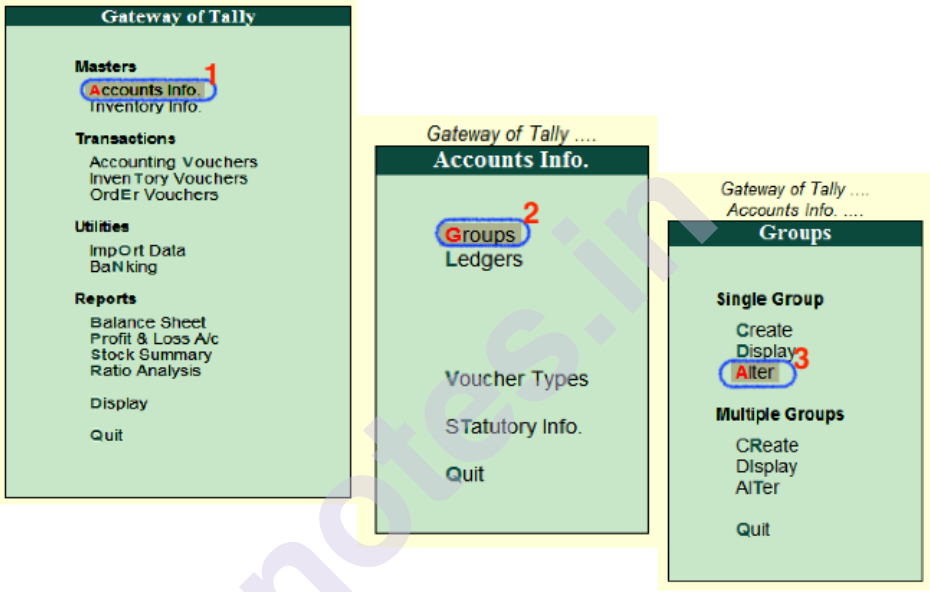
How to Alter Group in Tally ERP 9?

In Tally ERP 9 application, after creating the group, we can alter the details as per the requirements. Refer the following steps to modify/alter group in Tally:

Step 1: Use the following path to alter groups in Tally

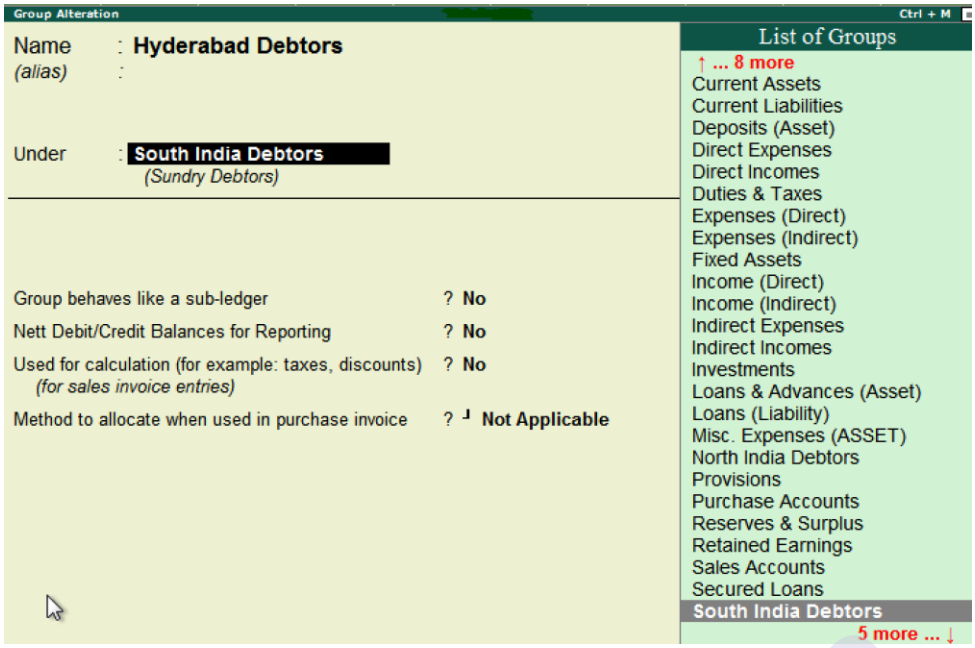
Gateway of Tally → Accounts Info →Groups

Step 2: Click on Alter option under Single Group.



Step 3: From the given search field, we can search the group and then click on that group name to modify the details.

Step 4: Update the required details on the Group Alteration screen and then click on A: Accept to save the details.



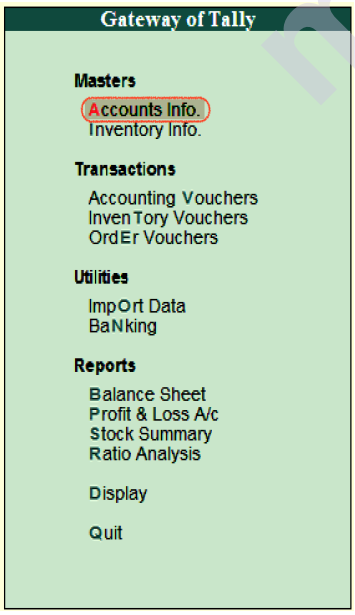
2.20.2 Ledgers

Tally automatically creates two ledger accounts, i.e., Profit & Loss account and Cash in Hand account. As per the requirements of the organization, we can create the ledger accounts. In Tally, we cannot create another profit & loss account. We can create any number of cash accounts with different names.

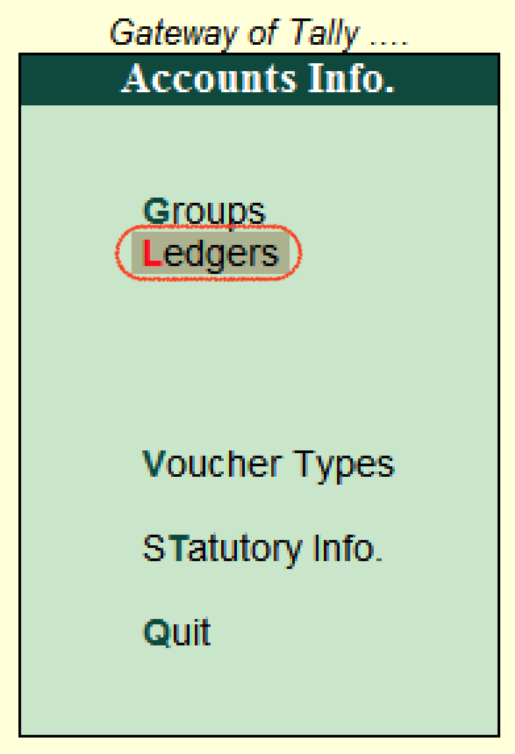
Step 1: Use the following path to create ledger accounts in Tally

Gateway of Tally → Accounts Info → Ledgers → Single Ledger → Choose Create

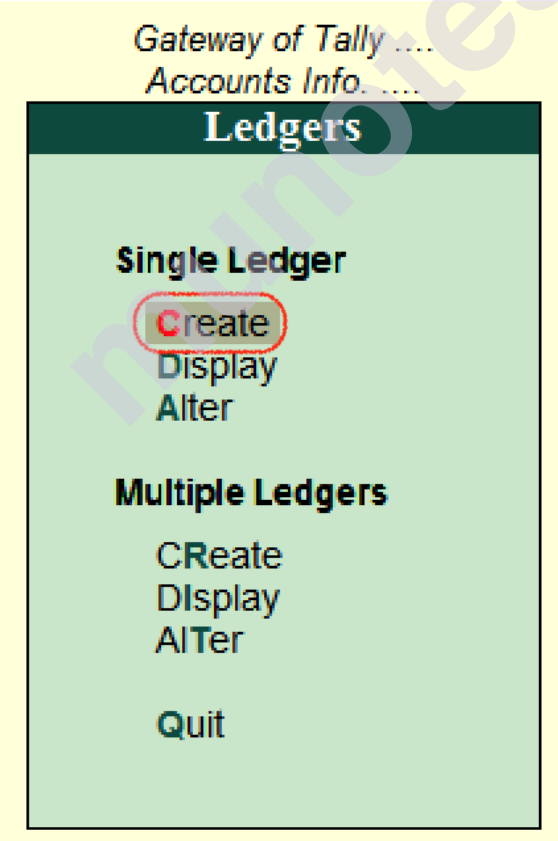
Step 2: Click on Accounts Info under Gateway of Tally screen.



Step 3: Choose Ledger option under Account Info.



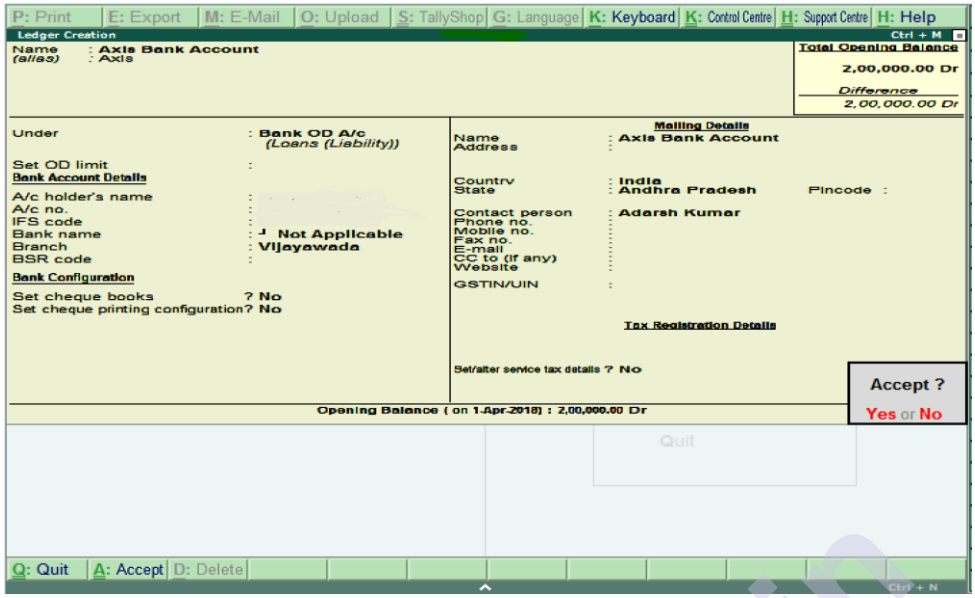
Step 4: Under Single Ledger, choose the option Create



Step 5: Update the following details on Ledger creation screen.

Name: Specify the unique name of the ledger account.

Under: Under List of Groups, choose the group name that pertains to the ledger account.



In Tally, choose the "Yes" option under Accept to save the configured details.

How to Display Single Ledger in Tally?

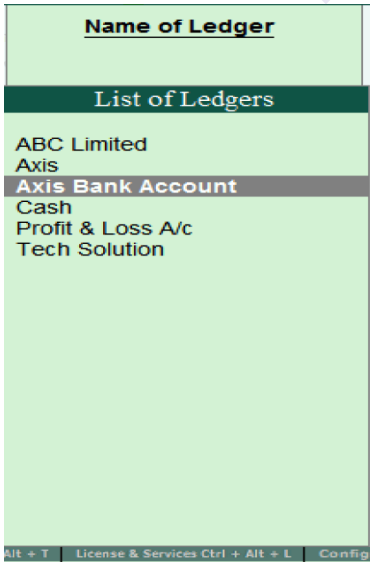
In Tally, after the creation of a single ledger account, we can view the details of the ledger by choosing the display option.

Refer the following steps to show how to display single ledger:

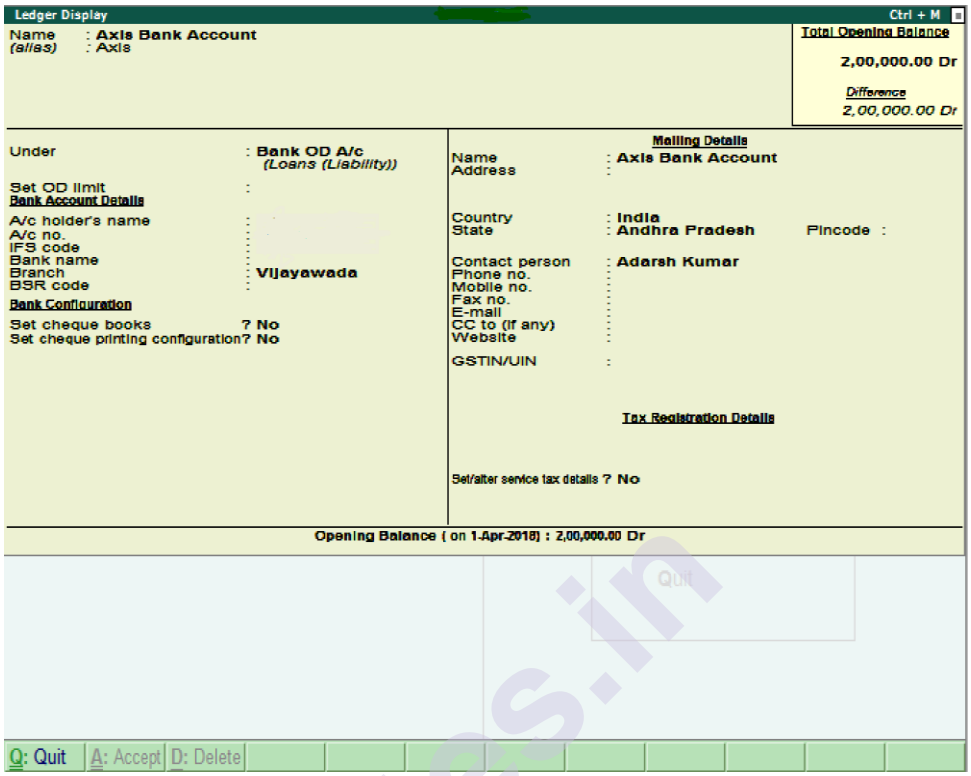
Step 1: Use the following path to display the single ledger in Tally

Gateway of Tally → Accounts Info → Ledgers → Single Ledger → Choose Display

Step 2: Under List of Ledgers, choose the ledger account.



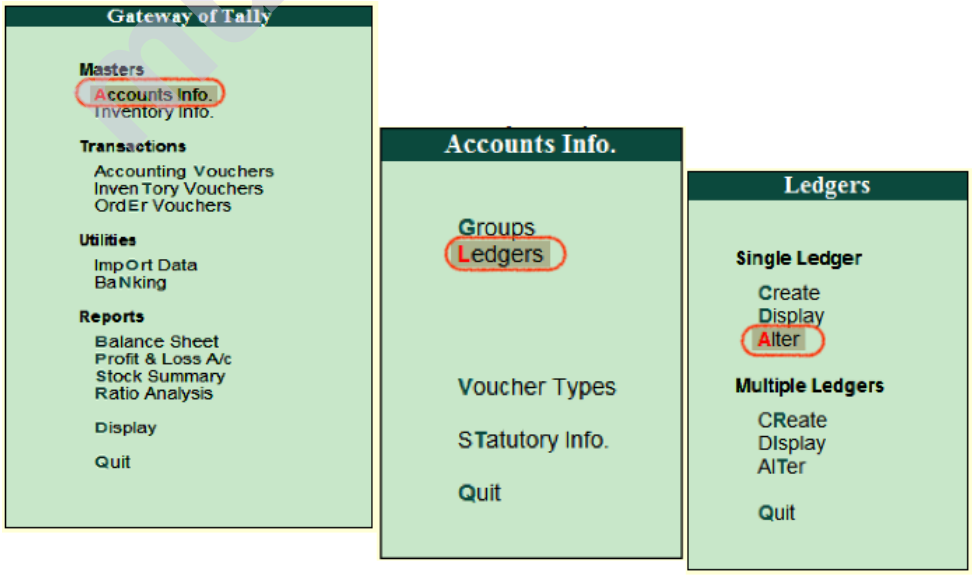
Step 3: Now, the following screen shows the complete details of ledger accounts.



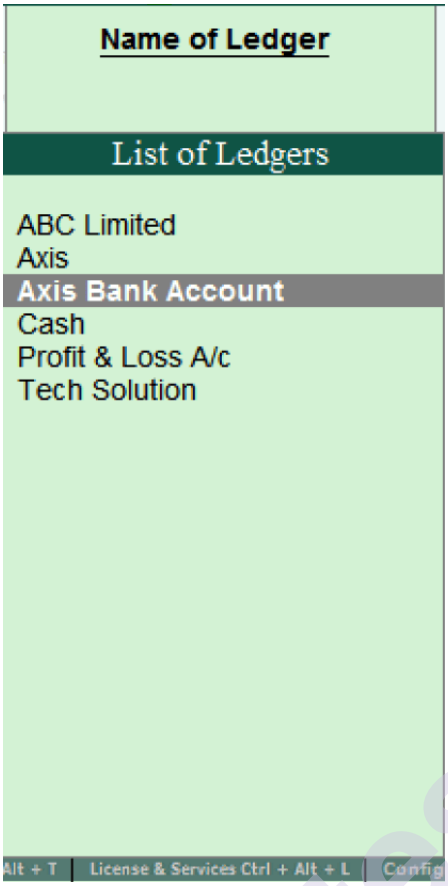
How to Alter Single ledger in Tally?

Step 1: Use the following path to alter the single ledger in Tally

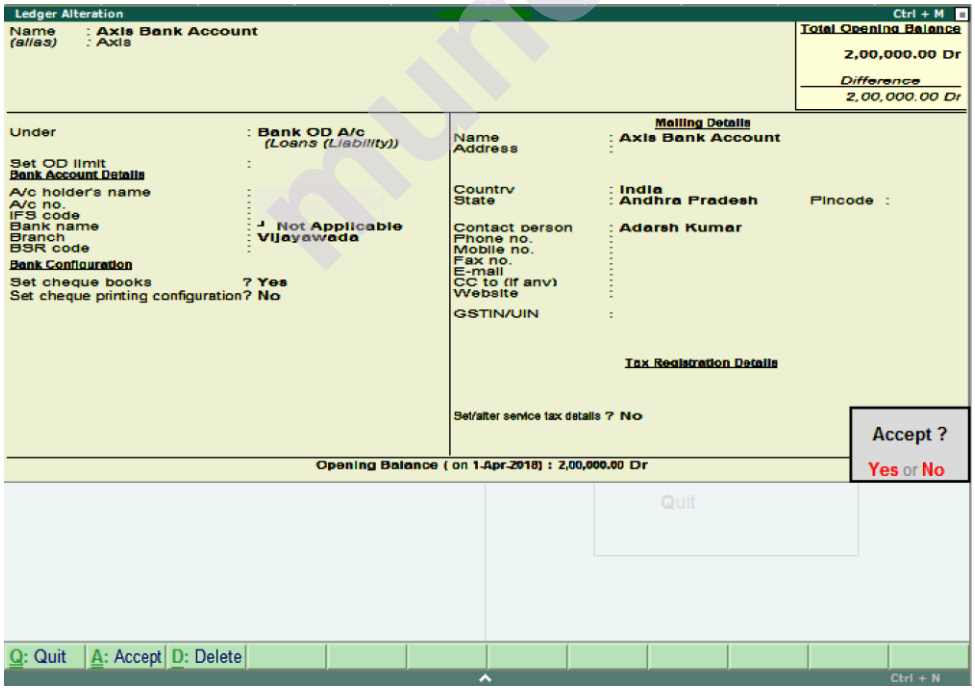
Gateway of Tally → Accounts Info → Ledgers → Single Ledger → Choose Alter



Step 2: Under the List of Ledgers, choose the ledger account option.



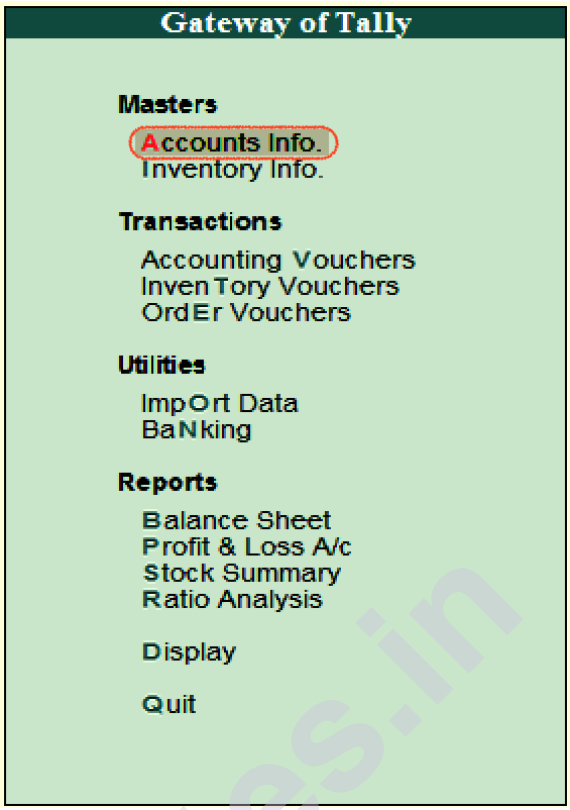
In Tally ERP 9, now modify/ alter the required details for ledger account. To save the changed details, click on A: Accept.



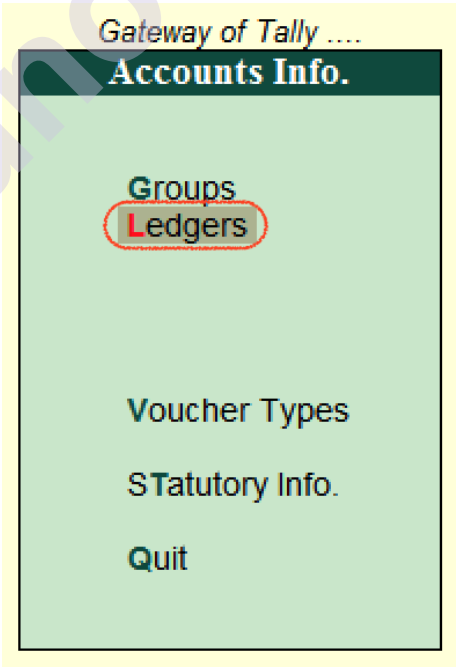
How to Create Multiple ledgers in Tally?

In this section, we are going to see how to create multiple ledgers in Tally.

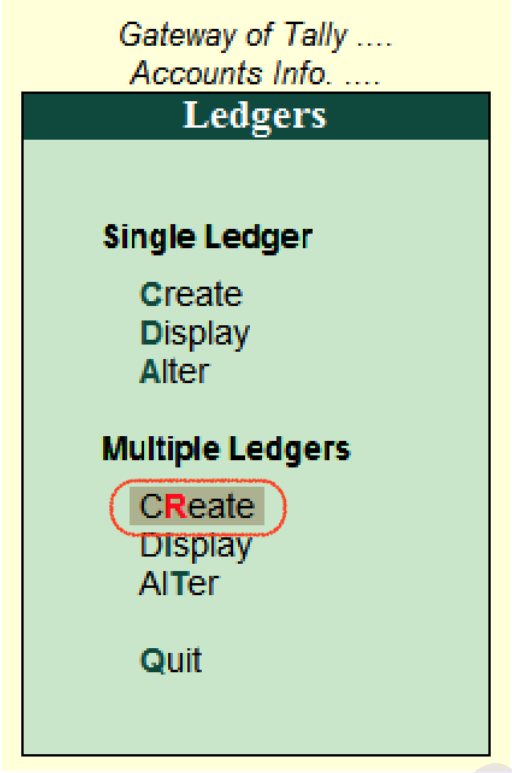
Step 1: Go to Gateway of Tally and then choose Accounts Info as follows:



Step 2: Choose the option Ledgers under Accounts Info.

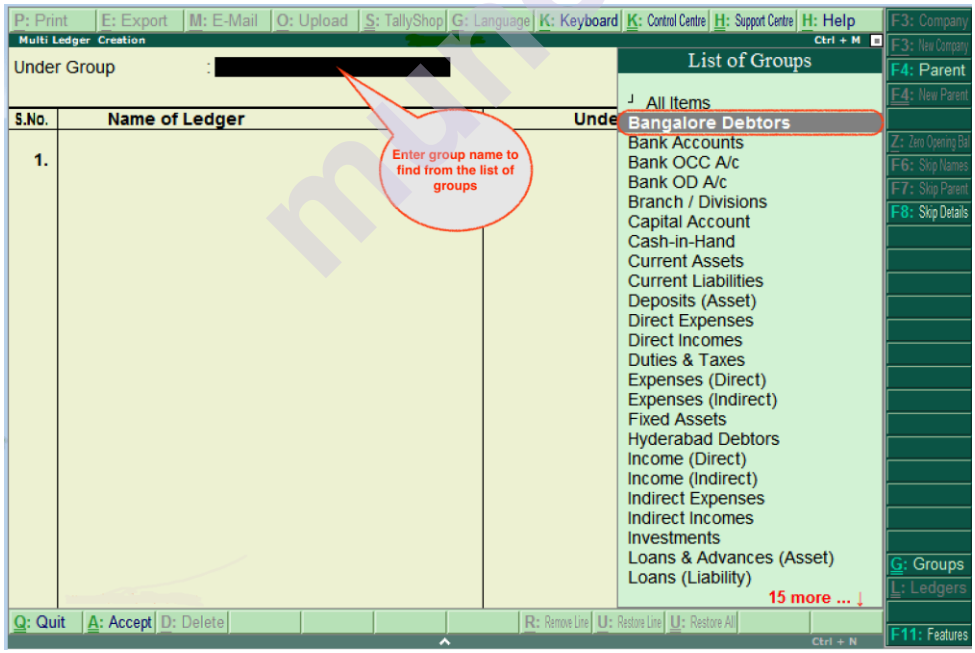


Step 3: Under multiple ledgers, click on Create option to create multi ledgers in Tally.



Step 4: Enter the following details under a multi ledger creation screen.

Under Group: Under the list of Groups, choose the Bangalore Debtors. However, we can search the group by entering the group name under the group text field.

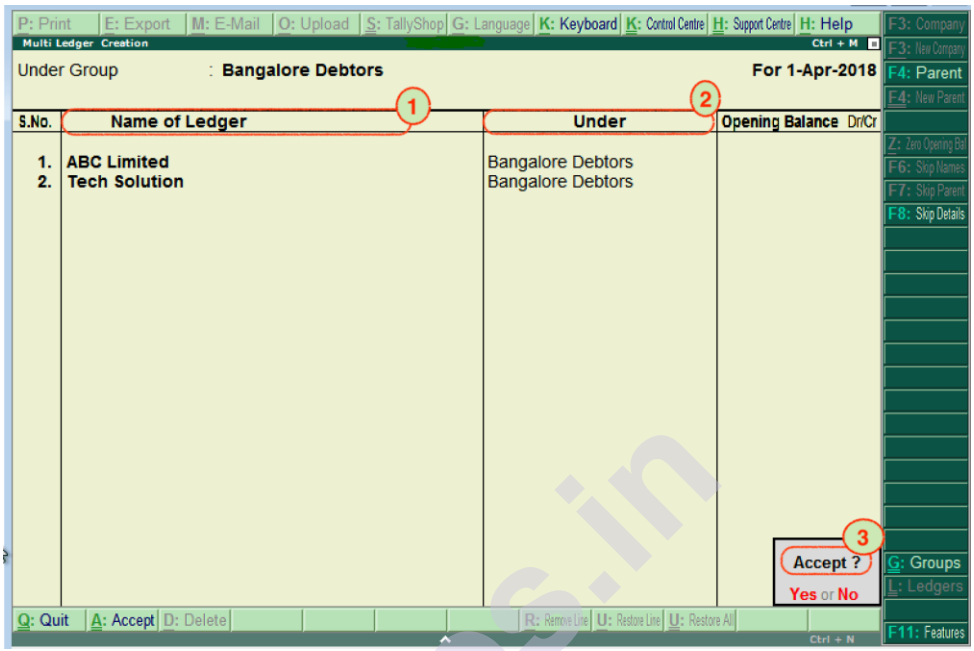


Step 5: Update the following details under the Group Bangalore Debtors screen.

Name of Ledgers: Enter the ledger name that we like to create in Tally.

Under: The under group field will be automatically filled by Tally as Bangalore Debtors.

Press Enter to continue after entering the details. We will get a message as Accept: Yes or No. To accept the updated details in Tally, choose "Yes".



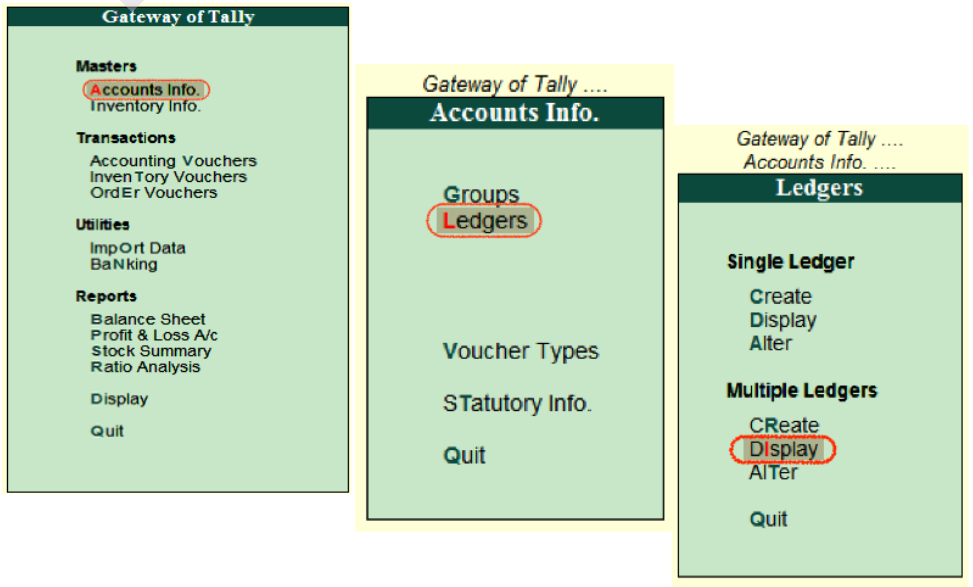
Now we have successfully created multiple ledgers in Tally ERP 9.

How to Display Multiple Ledgers in Tally?

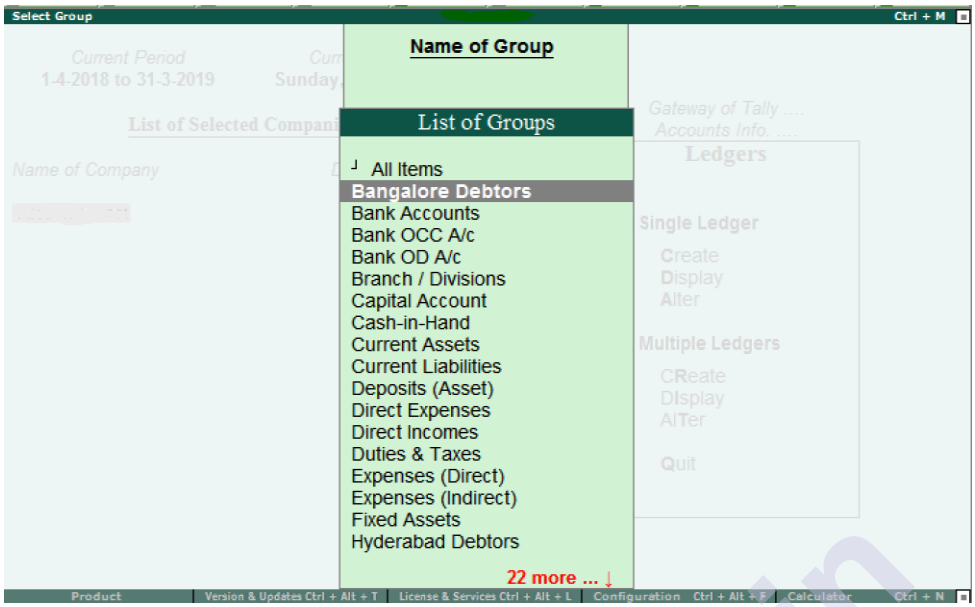
In Tally application, after ledgers are created, we can check multiple ledgers by choosing the display option.

Step 1: Use the following path to display multiple ledgers.

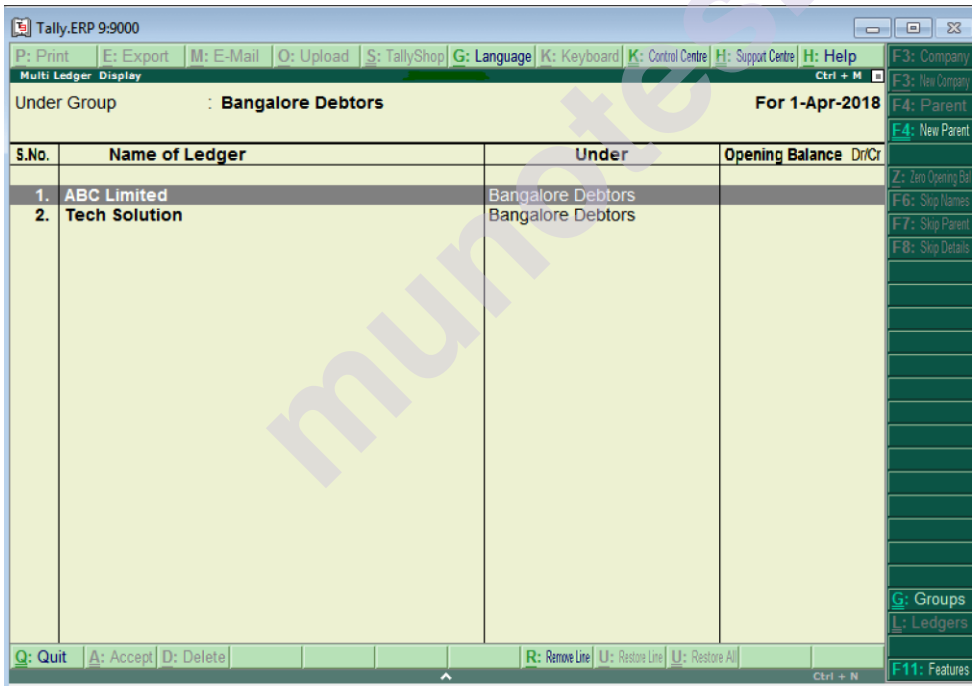
Gateway of Tally → Accounts Info → Ledgers → Multiple Ledgers (Display)



Step 2: Under the List of Groups, choose the group name as "Bangalore Debtors".



Step 3: Now, the multi ledgers screen displays, as shown below.



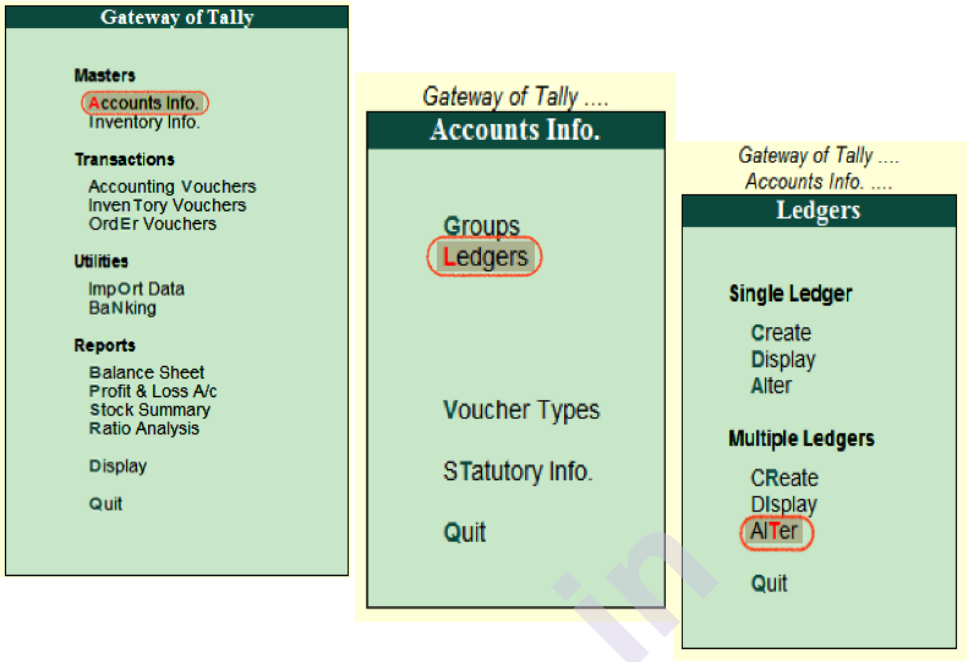
Note: Users are not allowed to modify any changes in this display mode. For this, users are required to choose the alter option.

How to Alter Multi Ledgers in Tally?

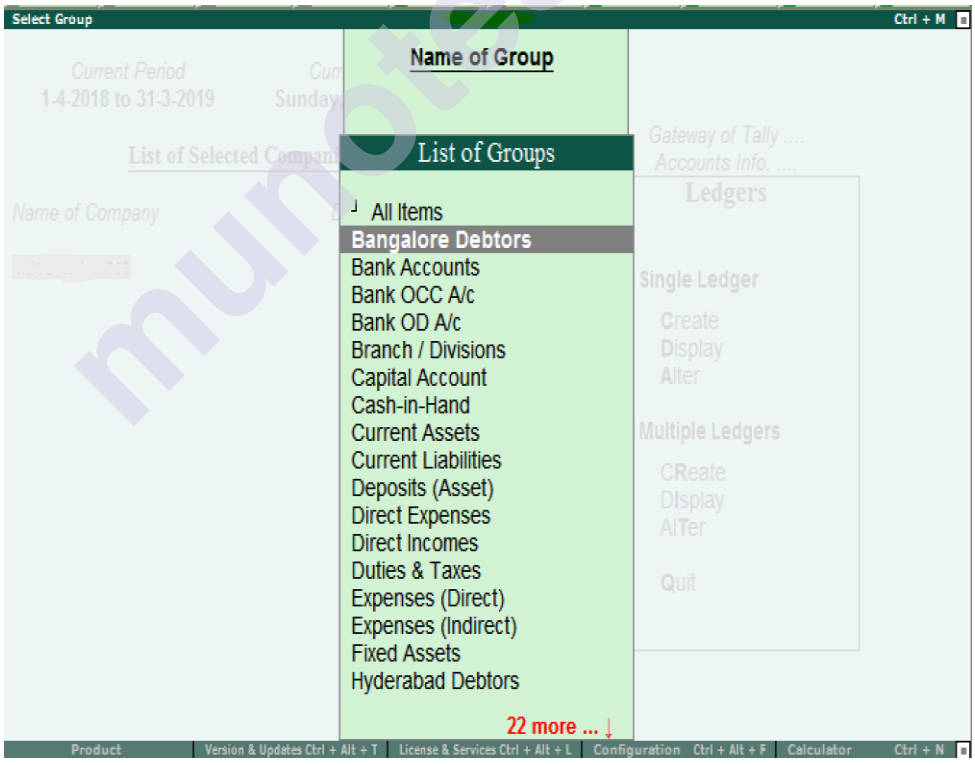
Use the following step to alter the multi ledgers in Tally.

Step 1: Using the following path, we can alter the change the details as per the requirements:

Gateway of Tally -> Accounts Info -> Ledgers -> Multiple Ledgers -> Choose Alter

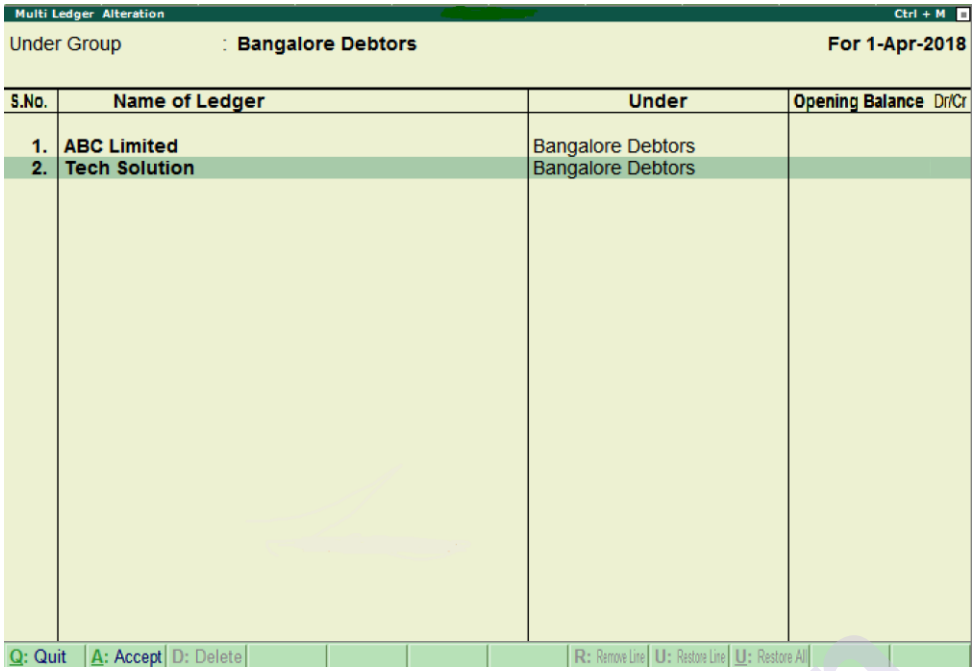


Step 2: Choose the required group name under the list of the groups.



Step 3: We can update the following details on multi ledgers alteration screen:

- Add or delete the ledgers
- Opening Balance - Dr/Cr



In Tally, to save the details, press Enter and then Accept.

2.21 INVENTORY MASTERS IN TALLY ERP 9

In Tally, we can create Inventory in the same manner as we create accounting ledgers and groups. Inventory in Tally refers to the following:

- Stock Group
- Stock Category
- Godown/Location
- Units of Measure
- Stock Item/Goods

2.21.1 Stock Group

In Inventory, the stock groups are similar to groups in accounting master. In Tally, the stock group is used to help in the classification of stock items according to their behavior. In Tally, the grouping of stocks enables us to identify and report in a statement as per stock wise. Under stock groups, the stocks can be grouped according to their product type, characteristics, and brand, etc.

Example of Stock Groups

Suppose a company sells Music systems, PCs and Laptops, the following structure shows the stock items that being sold.

Group A Computers	
A1 - Lenovo	13 Inch Laptop - A1a
	Lenovo 16 Inch PC - A1b
A2 - Dell	Dell 13inch Laptop - A2a
	Dell 16 inch Pc - A2b
A3 - HP	HP 13inch Laptop - A3a
	HP 16 inch PC - A3b

Here, all the PC's and laptop are grouped under computers. The computer of the main stock group will be created in Tally.

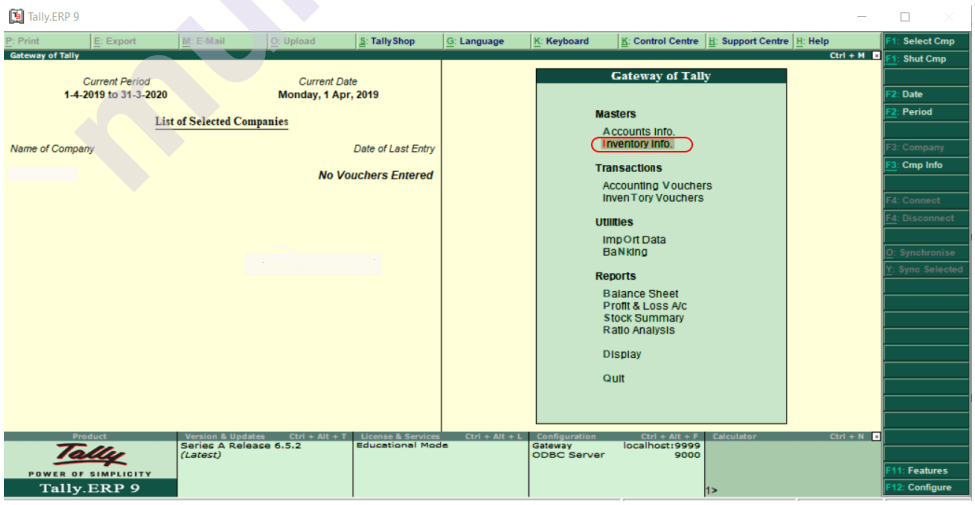
Group B - Music System	
B1 - Sony	Blue Ray Player - A2a
	DVD player - B2b

Here, music products are grouped under the music system. Music system of the main stock group will be created in Tally.

How to Open Stock Groups in Tally?

Step 1: Go to Gateway of Tally & Inventory Info

After opening the Tally application, choose the inventory info under the master tab.

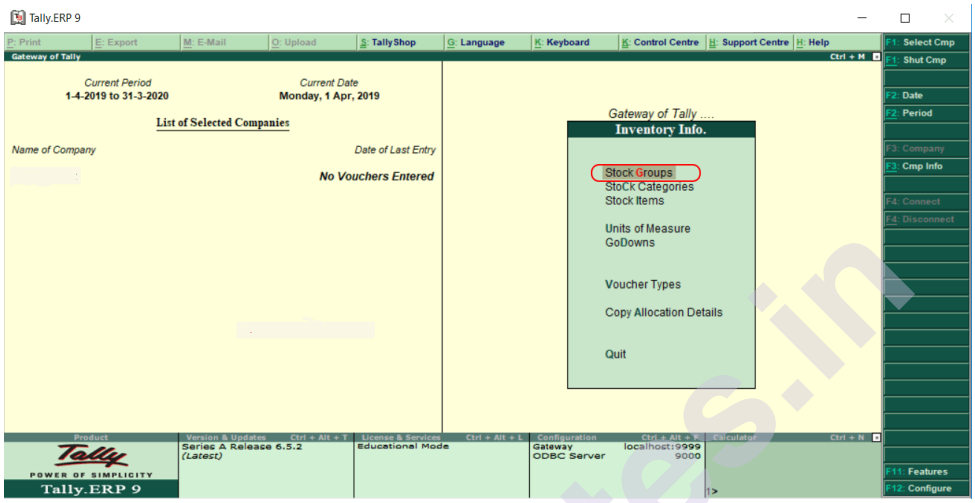


Step 2: Display the list of Inventory Masters under Inventory Information, where we can maintain inventory master data.

- Stock groups
- Stock Categories

- Stock items
- Unit of Measures
- GoDowns
- Voucher Types
- Copy Allocation details

In Tally, to work with stock groups, click on the option stock groups.



Step 3: It displays the two types of stock groups under stock groups.

- Single Stock Group
- Multiple Stock Groups

In Tally, we are allowed to create, modify, and display single and multiple stock groups.

In a stock group, we can find the total sales, as per the brand-wise at a particular period of time.

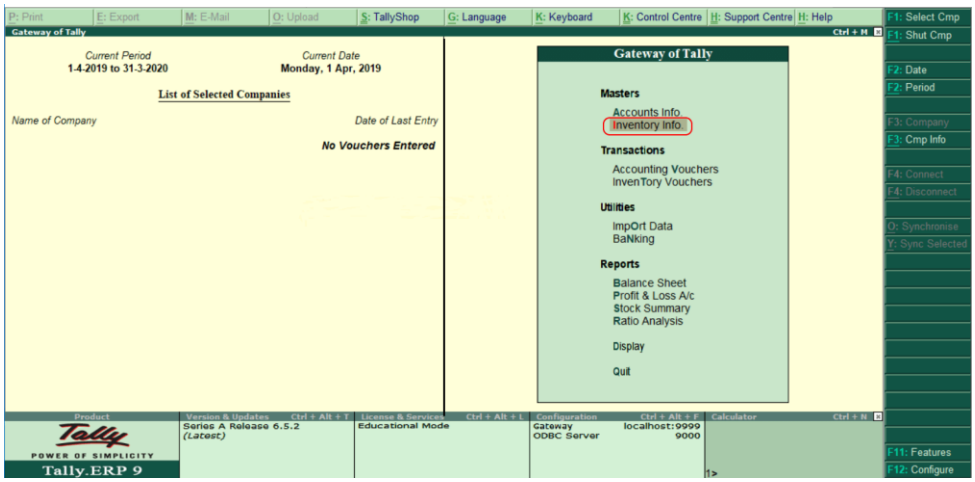
Creating Single Stock Group in Tally

In Tally, Stock Groups can classify the products according to their common behavior. Use the following navigation paths to create a single stock group in Tally ERP 9:

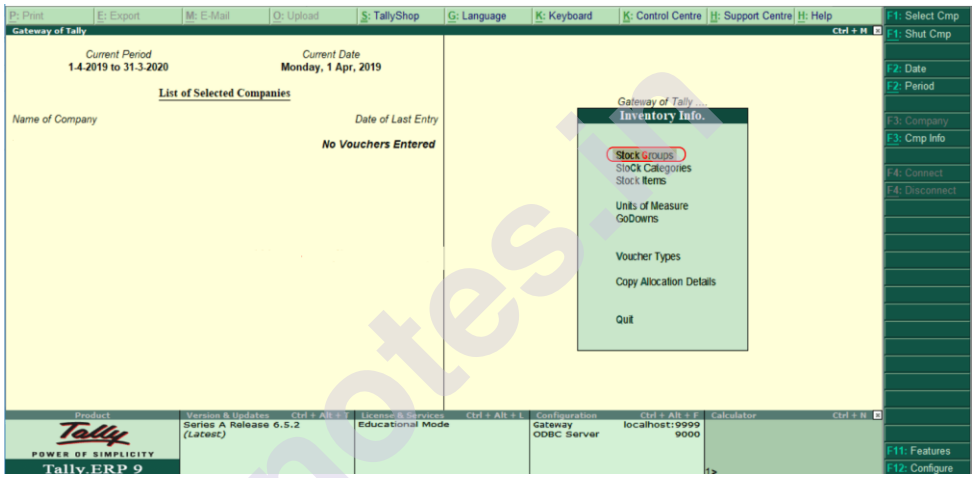
Gateway of Tally → Inventory Info → Stock Groups → Single Stock Group → Create

In Tally ERP 9, use the following step by step procedure for the creation of a single stock group.

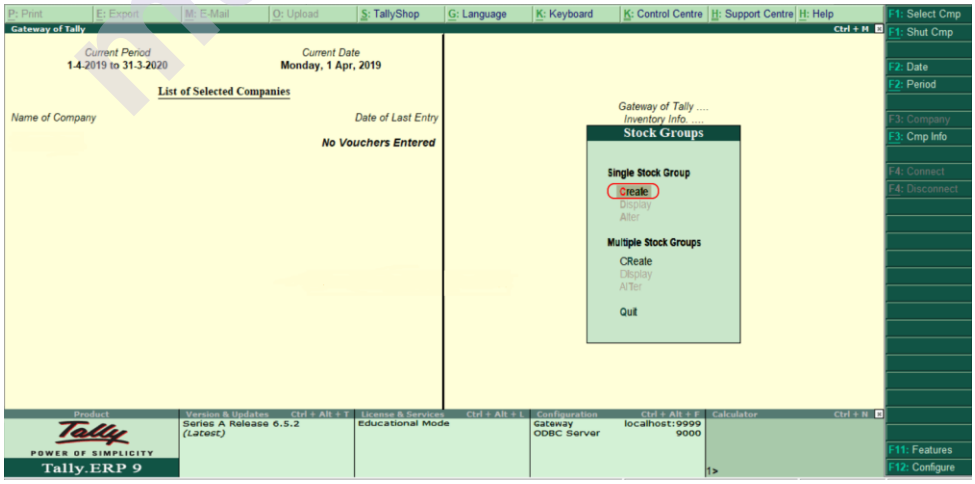
Step 1: Choose Inventory Info under the Gateway of Tally.



Step 2: In the next section, choose Stock Groups under Inventory Info.



Step 3: Choose 'Create' option under a single stock group to create a single stock group as per the company requirement.

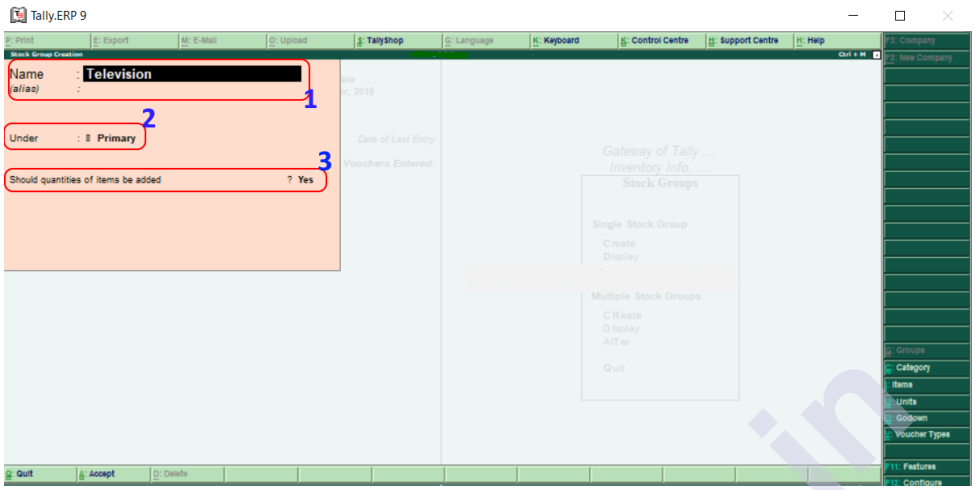


Step 4: Enter the following details in the next screen "Single Stock Group Creation".

1. Name: Specify the stock group name that has to be created in Tally. In the following image, we have given Television as a new single stock group.

2. Under: In this, choose the stock group as primary.

3. Should quantities of items to be added: In this, choose Yes option.



Choose A: Accept after entering all the required details to accept the updated details.

In Tally, we have successfully created a single stock group.

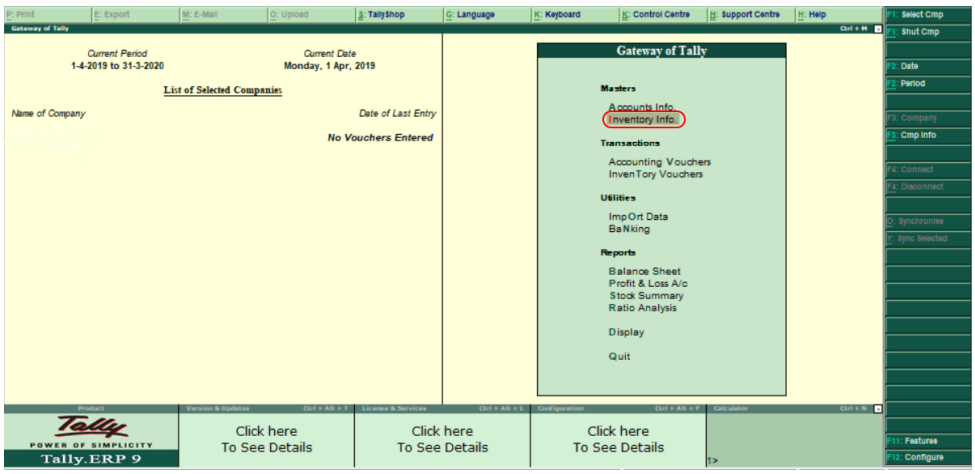
Creation of Multiple Stock Groups in Tally

The next step is the creation of multiple stock groups. In Tally, use the following navigation path to create multiple stock groups:

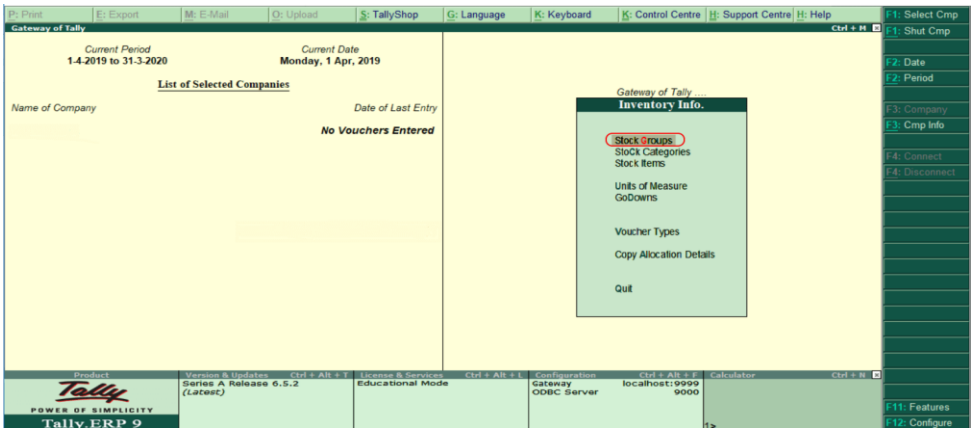
Gateway of Tally → Inventory Info → Stock groups → Multiple stock groups → Create

In Tally ERP 9, follow the below steps for the creation of multiple stock groups.

Step 1: Choose the option Inventory Info under the Gateway of Tally screen.



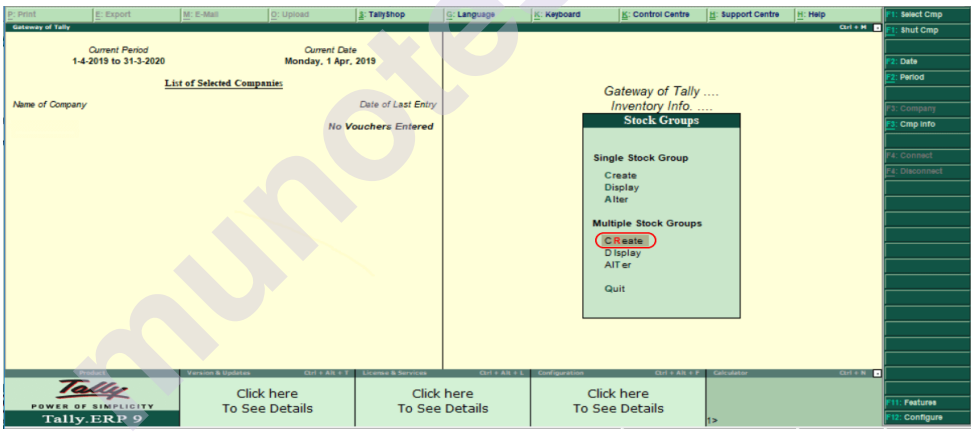
Step 2: Under Inventory Info, choose the Stock Groups option.



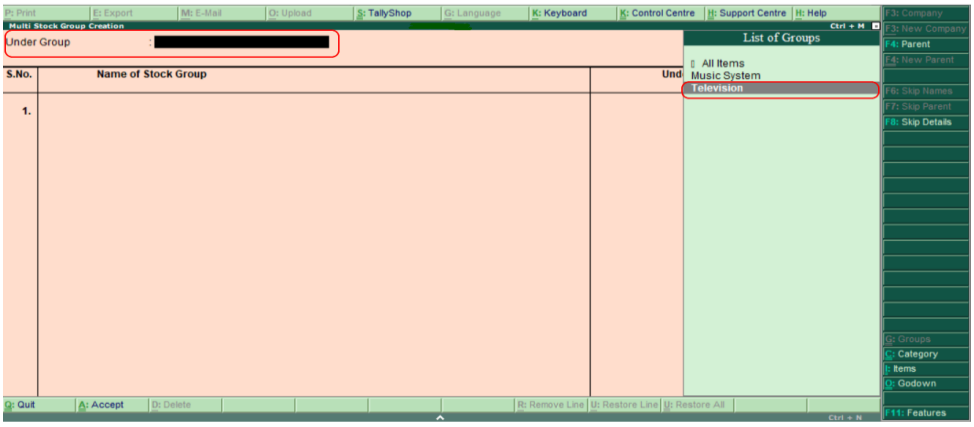
Step 3: It displays two types of groups under Stock Groups.

- Single stock group
- Multiple stock groups

In Tally, we already created single stock groups. Here we will create multiple stock groups. Now, under multiple stock groups, choose the 'Create' option.

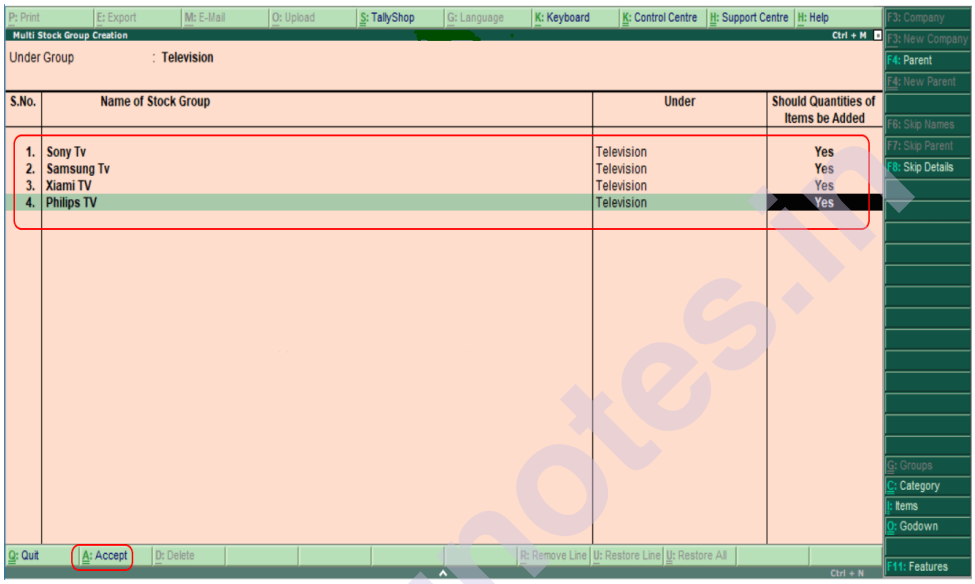


Step 4: Under the List of Groups, we need to choose the Group. Here we have given Television as under Group.



Step 5: Now, we will update the Stock Group, as shown below.

Stock Group Name	Under	Should Quantities of Items be Added
Sony Tv	Television	Yes
Samsung Tv	Television	Yes
Xiami Tv	Television	Yes
Philips Tv	Television	Yes



In Tally, after maintaining the required details for the creation of multiple stock groups, choose A: Accept to save the configured details.

2.21.2 Stock Category

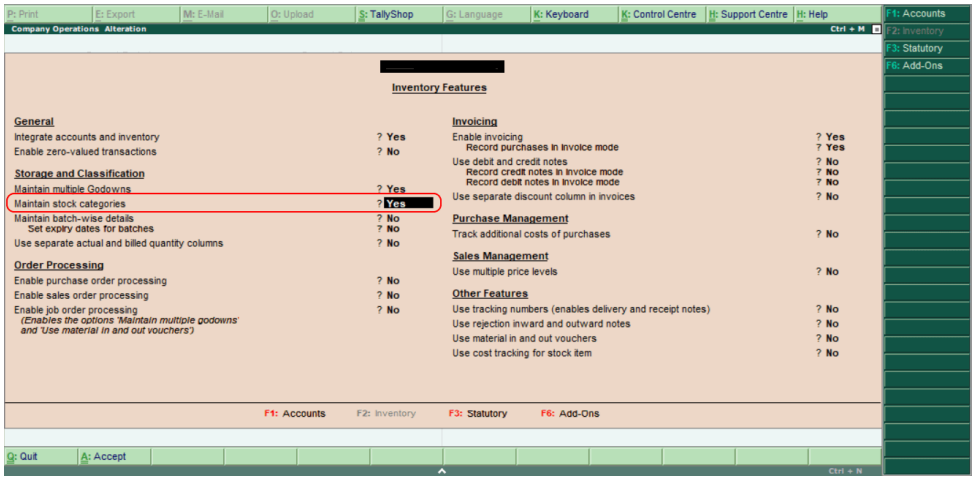
Create Stock Category in Tally

In Tally, a stock category can be created by using two methods, as shown below:

- Single Stock Category
- Multiple Stock Category

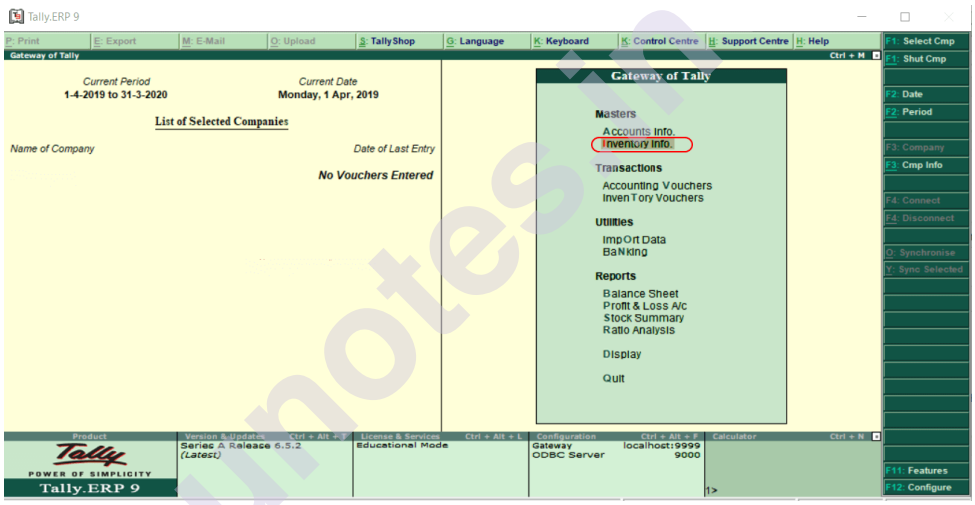
We need to set 'Yes' before the creation of stock category in Tally to maintain Stock Categories in F11: Features. Use the following path to create a stock category:

Gateway of Tally → F11: Features → Inventory Features

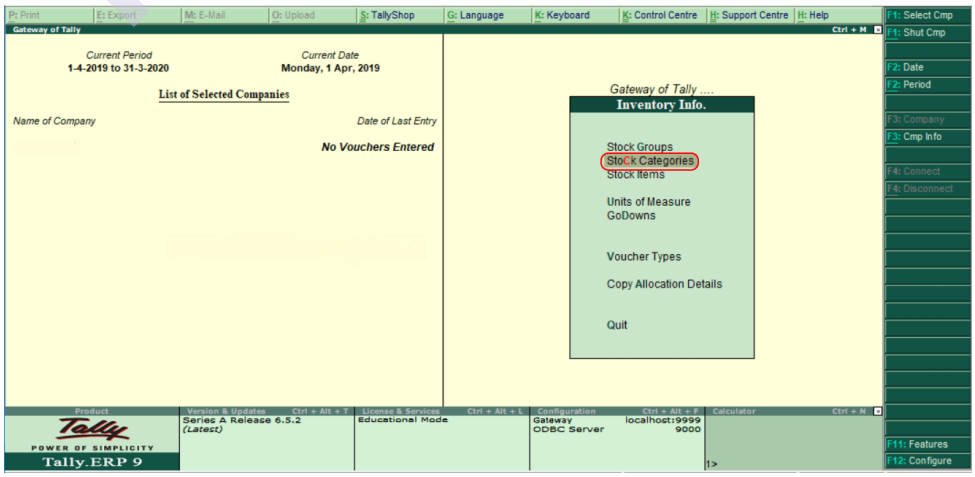


Creation of Single stock category in Tally

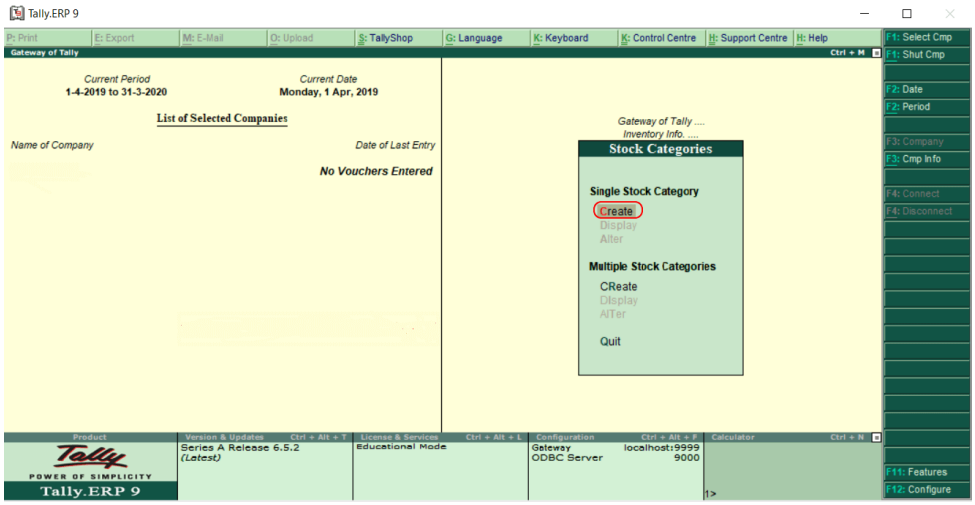
Step 1: Go to Gateway of Tally and then choose Inventory Info option.



Step 2: Choose the Stock Categories option under Inventory Info to create a stock category in Tally.



Step 3: Choose the 'Create' option under the Single stock category to create a single stock category in Tally.

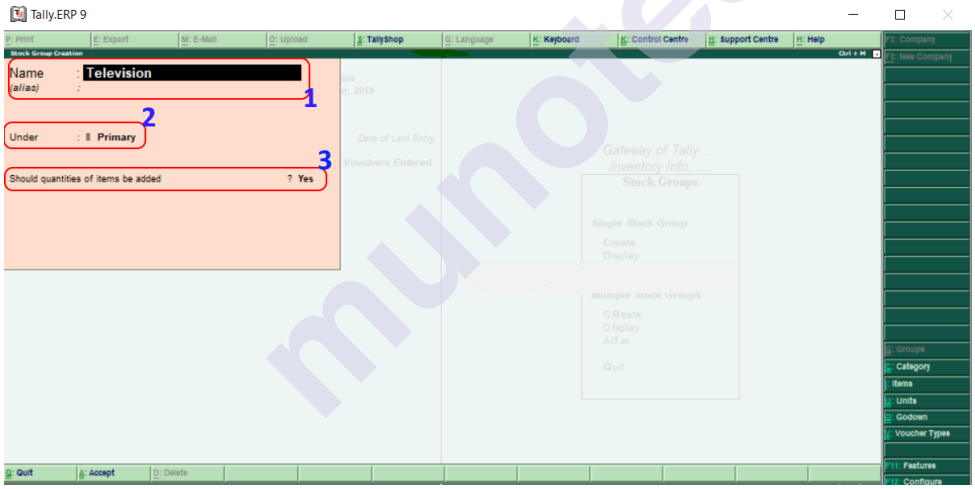


Step 4: Update the following details in the next screen 'Sintock creation'.

1. Name: Enter the stock category name that has to be created in Tally. In the given screenshot, we have given the name of a stock category as '32 Inches TV'.

2. Under: In this, choose the stock group as Primary.

3. Should quantities of items to be added: In this, choose Yes option.



Choose A: Accept after entering all the required details to accept the updated details.

In Tally, we have successfully created a single stock group.

2.21.3 Godown/Location

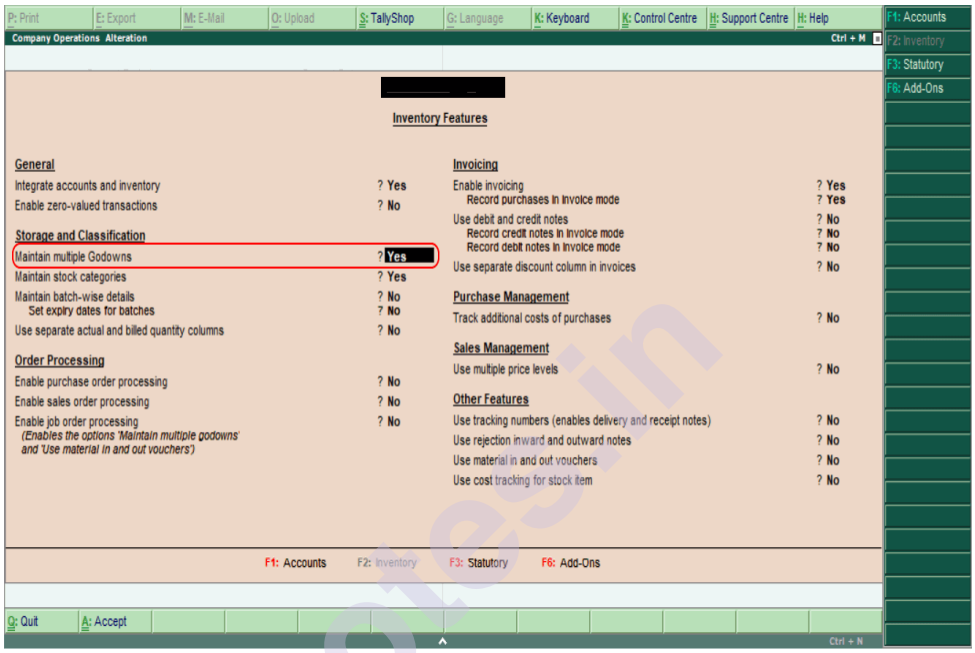
Creation of Godowns/ Location in Tally

Godowns is a kind of location where stock items are safely stored. As per Godowns, the reports of stock items can be prepared in Tally. Using the two methods, we can create Godowns in Tally:

- Single Godowns
- Multiple Godowns

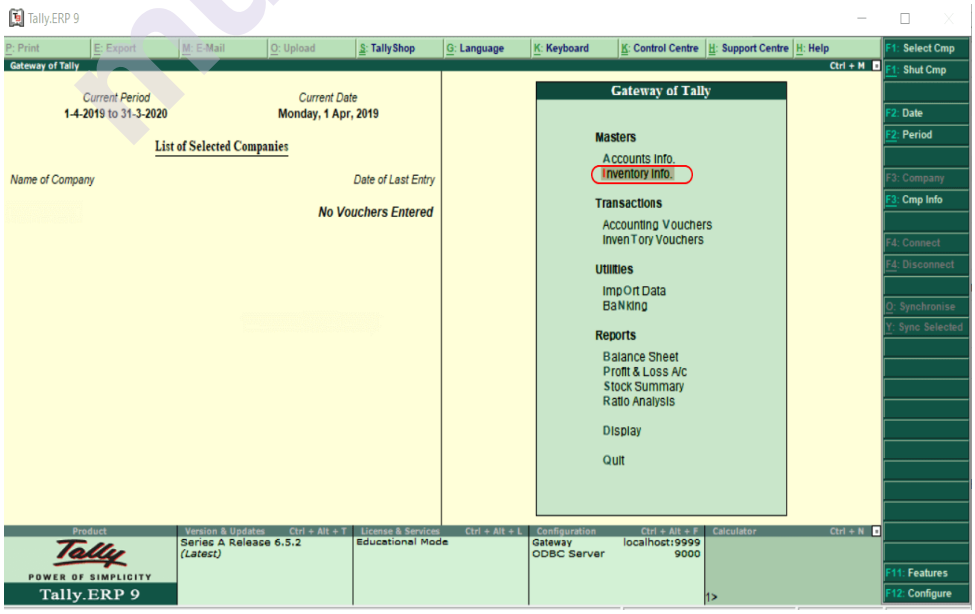
We need to set 'Yes' before the creation of multiple Godowns in Tally to maintain multiple Godowns in F11: Features. Use the following path to create Godowns/ Location in Tally:

Gateway of Tally → F11: Features → Inventory Feature

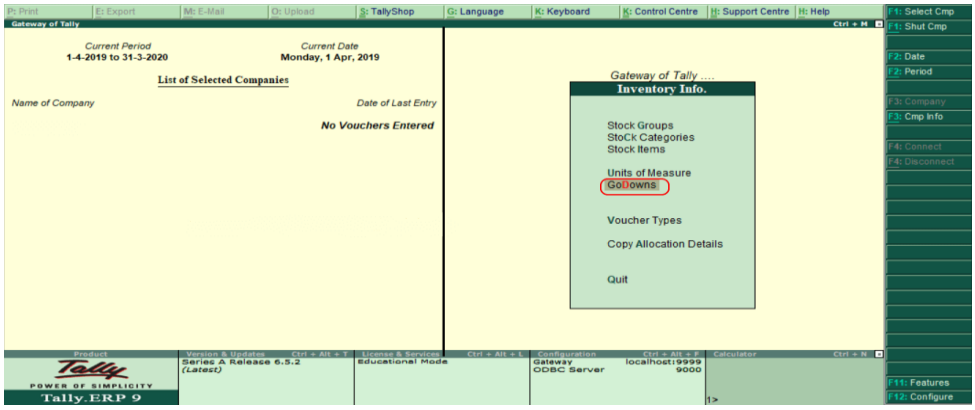


How to Create Single Godowns

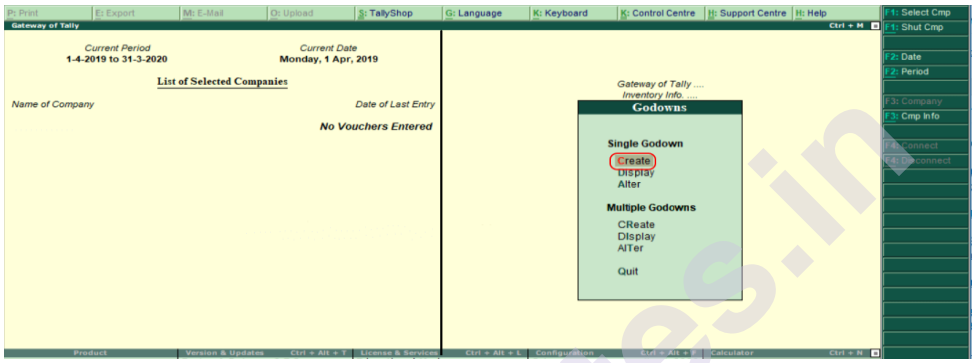
Step 1: Choose the option Inventory Info under Masters.



Step 2: Choose GoDowns option under Inventory Info to create Godowns in Tally as per company requirements.

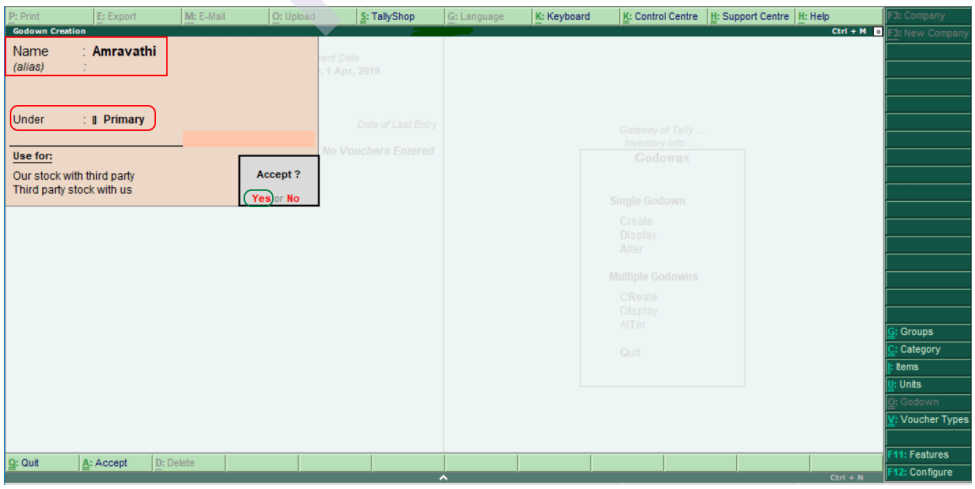


Step 3: Choose the "Create" option under Single Godowns to create Godowns in Tally.



Step 4: Enter the following details in the next screen GoDown creation.

- Name: Specify the Godown name. We can enter the Godown name as the name of location where it has been located.
- Under: Specify under which godown comes.
- We will press Enter after entering the details and to accept the configured Godown in Tally, press 'Y' or Enter.



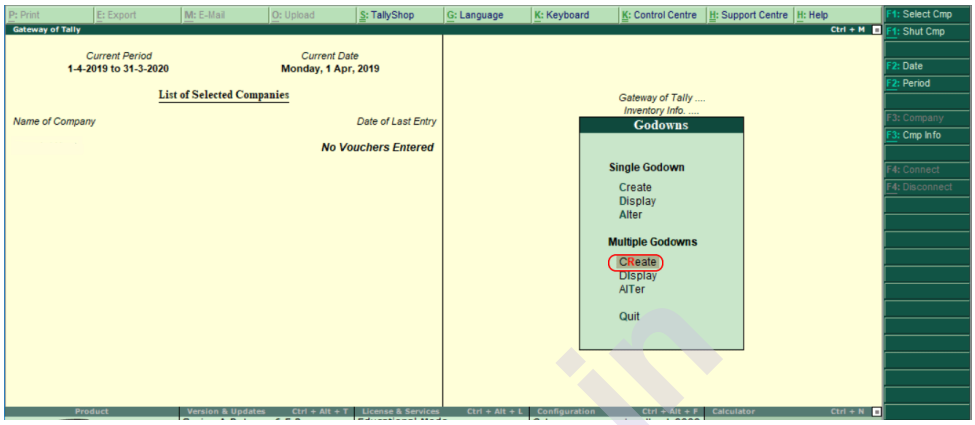
In the above image, we created a new Godown with the name "Amravathi" under Primary.

How to Create Multiple Godowns in Tally?

Now we will learn step by step process that how to create multiple Godowns in Tally.

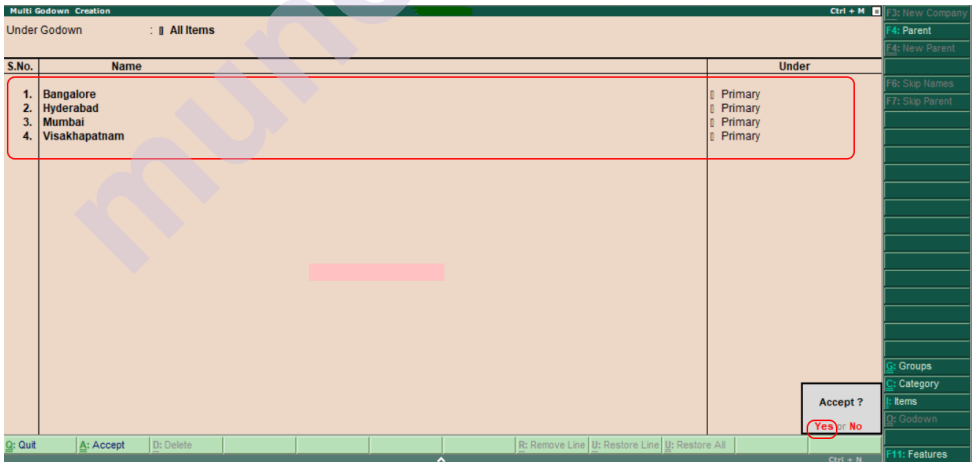
Step 1: Use the following navigation path to create multiple Godowns:

Gateway of Tally → Inventory info → Godowns and click on create under multiple Godowns.



Step 2: Enter the following details in the next screen Multi Godown Creation.

- Name: Specify the name of Godown/ name of Location
- Under: In this, choose Primary.



In Tally, after updating all the Godowns/ locations, choose Yes to accept the data.

2.21.4 Units of Measure

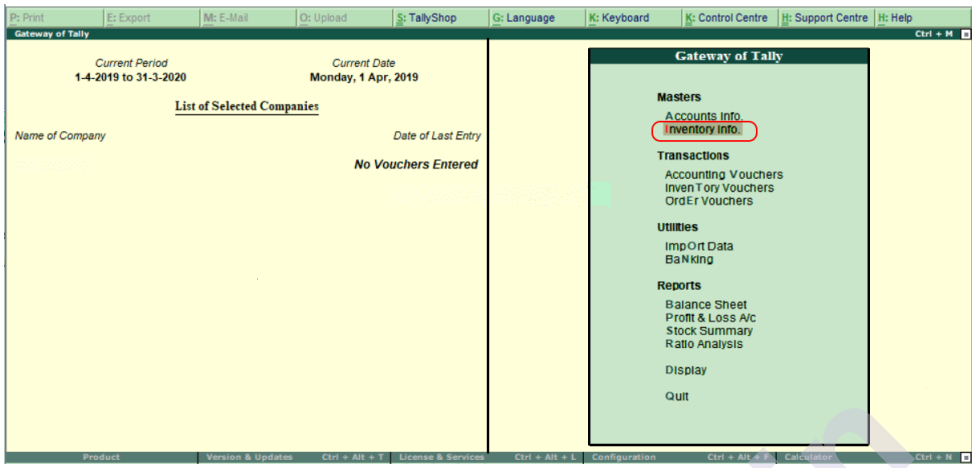
Create Stock Units in Tally ERP 9

We can create units and compound units (for example, Box, NO's pcs, etc.) to measure stocks in Tally. The compound unit is a combination of two units of measure. E.g., a box of 10 pieces is a compound unit of measure.

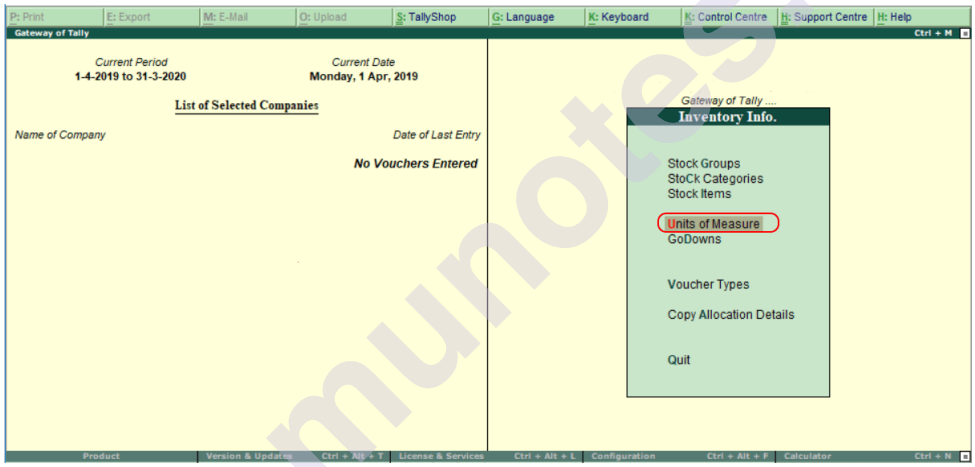
Use the following path to create a stock unit in Tally:

Gateway of Tally → Inventory Info → Unit of Measure → Create

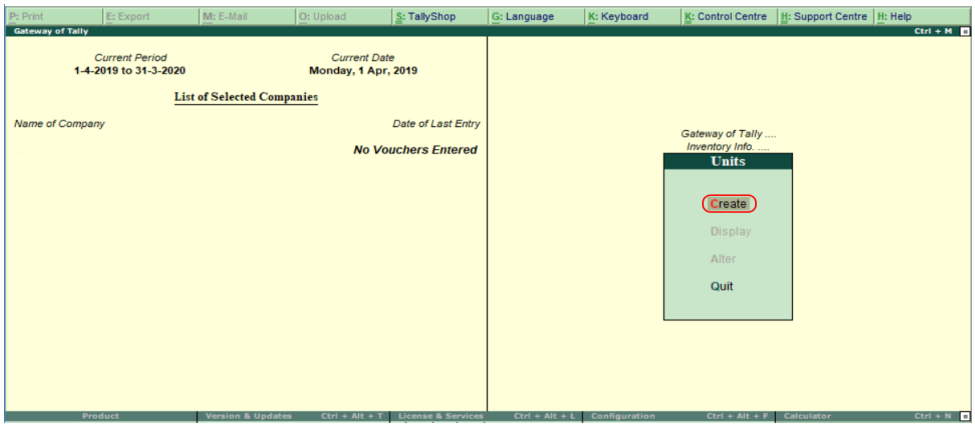
Step 1: Firstly, log in to Tally, then Go to Gateway of Tally and choose Inventory Info.



Step 2: Under Inventory Info, choose 'Unit of Measures'.



Step 3: Choose 'Create' option under Units to create units of measures in Tally.

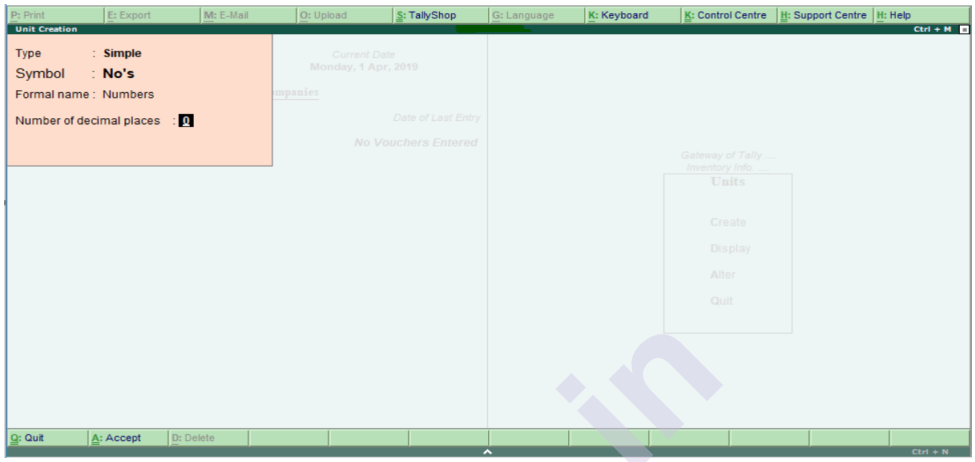


Step 4: Update the following details in the next screen 'Unit Creation'.

Symbol: Specify the symbol of units in which stock items are identified. For Example, No's indicates numbers.

Formal name: It refers as another name of the units. It is used to match the symbols with their respective names.

Number of decimal places: Decimal numbers can be used to detect units. For Example, 5.20 Kg refers to 5Kg and 200 gm.



Press A: Accept after entering all the required details to save the details in Tally.

2.21.5 Stock Items/Goods

How to Create Stock Items in Tally ERP 9

Stock items are referred to as goods that a company manufactures in Tally. In Tally, stock items can be created using two methods which are as follows:

- Single Stock Item
- Multiple Stock Items

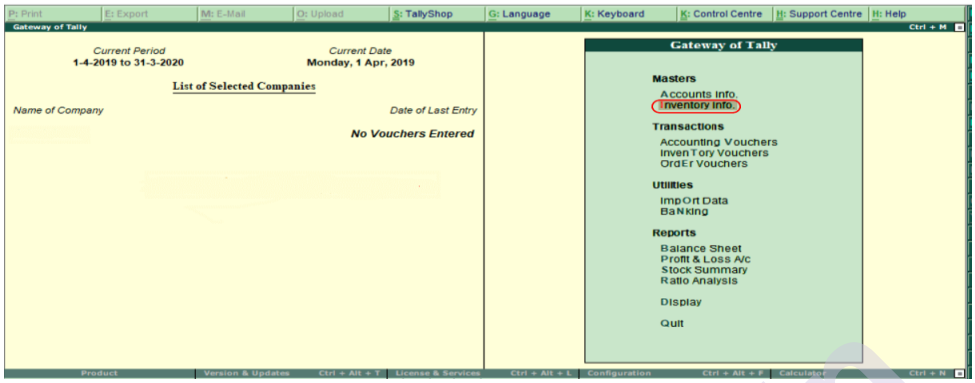
Groups	Name of Item	Unit	Opening Qty.	Rate	Amount
Television	MI 32 Inch TV	Nos	2	15,000	30,000
	MI 42 Inch TV	Nos	2	20,000	75,000
	Sony 32 Inch TV	Nos	3	25,000	75,000
	LG 32 Inch TV	Nos	4	20,000	80,000
Music System	Sony 5.1 Music System	Nos	2	20,000	40,000
	Phillips DVD player	Nos	5	15,000	75,000
	Sony Blue Ray Player	Nos	10	25,000	250,000

Creation of Single stock item

Use the following path to create single stock items in Tally.

Gateway of Tally → Inventory Info → Stock Items → Single stock item → Create

Step 1: Go to Gateway of Tally and then Choose Inventory Info.



Step 2: Choose Stock items under Inventory Info.

Step 3: Choose "Create" under the Single Stock Item.

Step 4: Enter the following details on the next screen, "Single Stock Group Creation".

Name: Specify the name of the stock item.

Alias: It can be short name of stock item or product id or another name.

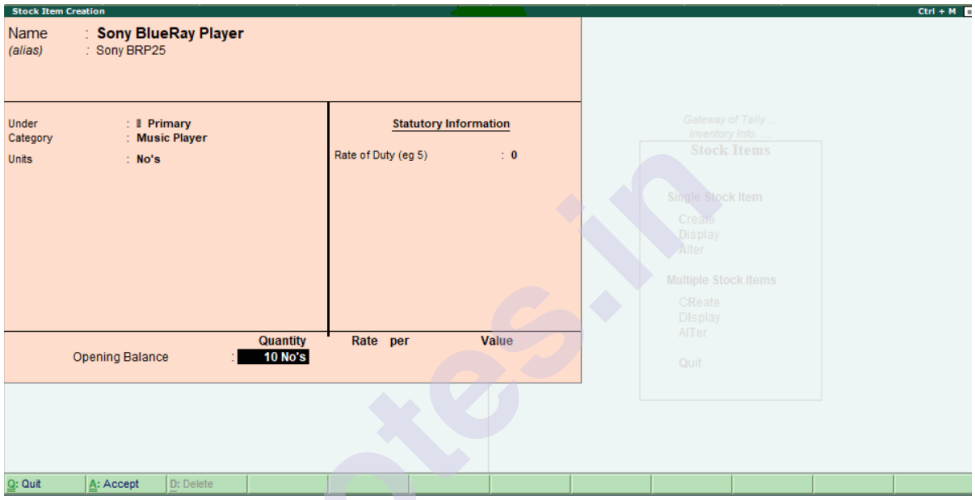
Under: Specify the stock group under which this stock item is to be specified.

Category: Specify the stock category of stock items.

Units: It specifies the units of measure to count the stock items.

Opening Balance: Specify the opening balance of the stock items.

Quantity: Specify the quantity of stock items.

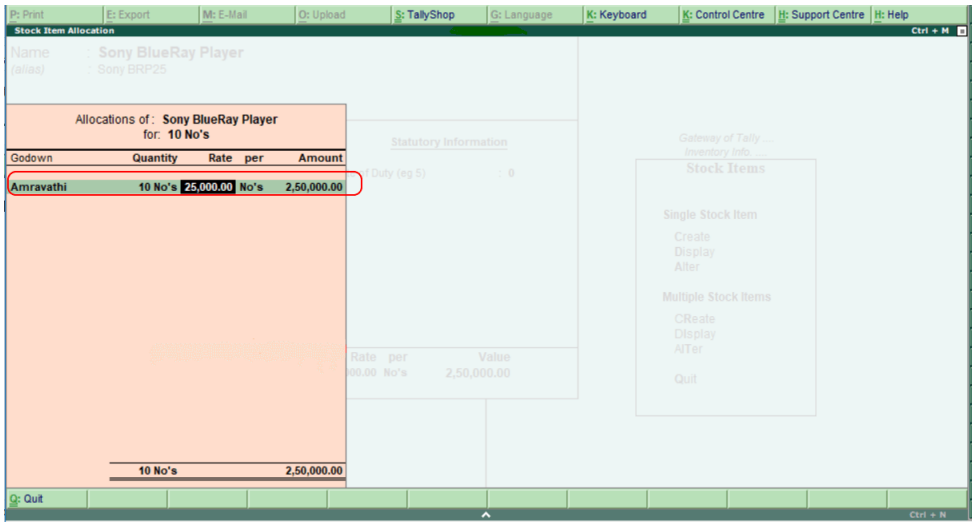


Rate: When we are entering the values of the rate for stock items, a new window opens. Update the following details, as shown below:

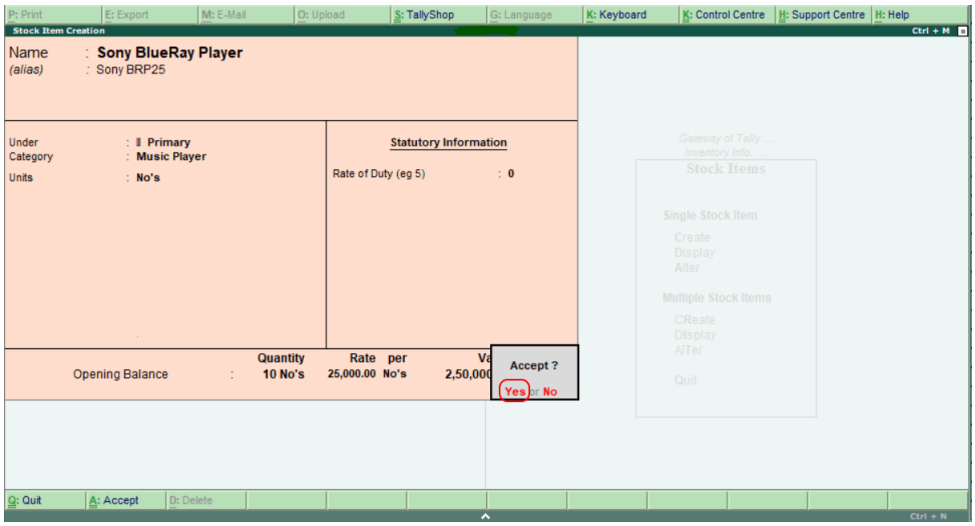
Godown: Under the list of Godowns, choose Godown.

Rate: Specify the rate of stock items.

Based on the quantity and rate amounts, per and amount values are automatically calculated.



After specifying all required details, press enter to continue. In Tally ERP 9, choose 'Yes' to save the details.

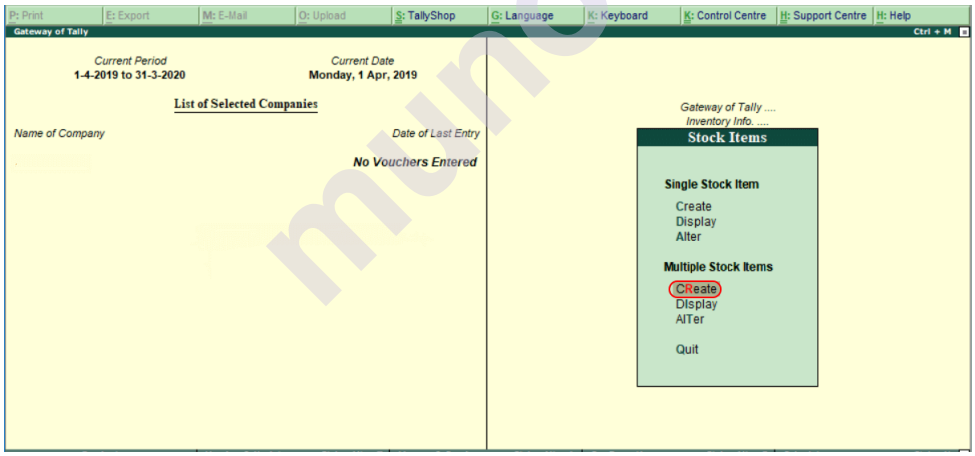


Creation of Multiple Stock Items

Use the following path to create multiple stock items:

Gateway of Tally.ERP 9 > Inventory Info > Stock Items > Multiple stock items > Create

Step 1: Choose the "Create" option under multiple stock items, as shown below.



Step 2: Enter the following details in the next screen, "Multi Stock Item Creation".

Under group: Choose under group as all items to update the different types of stock items with different category groups.

Now update all the required details: Specify the name of items, stock group, stock category, stock units, stock opening qty, and rates.

In the Tally ERP 9 system, click on A: Accept to save the entered details.

2.22 VOUCHERS IN TALLY ERP 9

A voucher is the primary online document for recording transactions. Tally.ERP 9 provides 20 (8-Accounting, 8-Inventory & 4-Non-Accounting) different predefined voucher formats. These are used for recording different types of transactions. A payment voucher is used for all types of payments, a receipt voucher for all types of money receipts, a sales voucher for recording sales transactions, and so on.

You will also learn that these predefined vouchers pertain to both accounts and inventory. Some of these vouchers can also be used differently according to the situation; for example, sales vouchers can be used as invoices, vouchers can be post-dated, and so on. Such use can be decided at the time of voucher entry by selecting the appropriate button. The predefined voucher types can be displayed as follows:

Gateway of Tally.ERP 9 > Display > List of Accounts > Ctrl + V [Voucher Types]

Types of vouchers

Tally.ERP 9 is preprogrammed with a variety of accounting vouchers, each designed to perform a different job. Tally also allows you to create user-defined Vouchers (Voucher Types) as per your requirements. The standard vouchers are classified into following categories:

1. Accounting Vouchers
2. Inventory Vouchers

2.22.1 Accounting Vouchers

We will discuss the following list of Accounting Vouchers in Tally ERP 9

1. Contra Voucher (F4)

As per accounting rules, contra entry is a transaction indicating transfer of funds from:

- Cash Account to Bank Account (Cash Deposit)
- Bank Account to Cash Account (Cash Withdrawal)
- One Bank Account to another Bank Account (Bank Transfer)

The following Vouchers can be done through the Contra Vouchers:

(a) Cash Deposited into Bank

(b) Cash Withdrawal from the Bank

(c) Funds Transfer from One Bank to another Bank

(d) Cash Transfer to Petty Cash

Go to Gateway of Tally.ERP 9>Accounting Vouchers>F4: Contra to display the Contra Voucher.

2. Payment Voucher (F5)

Payment voucher is used to account all the payments made by the company by way of Cash/Bank.

Payment voucher can be passed using Single Entry or Double Entry mode by configuring the setting Use Single Entry mode for Payment/Receipt/Contra in F12 configuration.

Gateway of Tally.ERP 9 > Accounting Vouchers > F5: Payment displays the Payment Voucher.

3. Receipt Voucher (F6)

Any money received from debtors against sales Invoices or on Account and for all transactions where money is received are accounted or entered into Tally.ERP 9 using the Receipt Voucher.

Go to Gateway of Tally > Accounting Vouchers > Select F6: Receipt from the button bar or press F6.

For example, if your company receives money from a customer for an earlier transaction say sales, and the same is passed through a Receipt Voucher:

Gateway of Tally.ERP 9 > Accounting Vouchers > F6: Receipt displays the Receipt Voucher.

4. Journal Voucher (F7)

It is for adjustment between any two ledgers. No outside parties, like Debtors, Creditors, Branches/Divisions are involved. These are for rectification entries in which as any kind of adjustment for non-cash or bank transactions are recorded here.

Gateway of Tally.ERP 9 > Accounting Voucher > Click on F7: Journal

5. Sales Voucher (F8)

Sales Voucher is used to record sales of goods/stock item in Tally. There are two modes in Sales Voucher, namely, (a) Voucher mode (b) Invoice mode

Gateway of Tally.ERP 9 > Accounting Voucher > Click on F8: Sales

By default, it will display Sales Voucher in Invoice mode. To switch between Voucher mode & Invoice mode, press Ctrl+V.

6. Purchase Voucher (F9)

Purchase Voucher is used to record purchase of goods/stock item in Tally. Similar to Sales Voucher, there are two modes in Purchase Voucher, namely, (a) Voucher mode (b) Invoice mode

Gateway of Tally.ERP 9 > Accounting Voucher > Click on F9: Purchase

By default, it will display Purchase Voucher in Invoice mode. To switch between Voucher mode & Invoice mode, press Ctrl+V.

7. Sales Return/Credit note Voucher (Ctrl+F8)

Credit Note is a document issued to a party stating that you are crediting their Account in your Books of Accounts for the stated reason or vice versa. It is commonly used in case of Sales Returns, Escalation/De-escalation in price etc.

All features and functions of Sales Voucher and Credit Note Voucher are same. So just like Sale Voucher, you can record transaction in Credit Note either in Accounting Invoice or Item Invoice.

A Credit Note can be entered in voucher or Invoice mode (either Accounting / Items).

You need to enable the feature in F11: Accounting or Inventory features.

- To use it in Voucher mode you need to enable the feature in F11: Accounting Features - Use debit and credit notes.
- To make the entry in Invoice mode enable the option F11: Accounting Features - Record credit notes in invoice mode.

To go to Credit Note Entry Screen,

- Go to Gateway of Tally > Accounting Vouchers.
- Click on Ctrl+F8: Credit Note on the Button Bar or press Ctrl+F8.

8. Purchase Return/Debit note Voucher (Ctrl+F9)

Debit Note is a document issued to a party stating that you are debiting their Account in your Books of Accounts for the stated reason or vice versa. It is commonly used in case of Purchase Returns, Escalation/De-escalation in price, any other expenses incurred by you on behalf of the party etc.

All features and functions of Purchase Voucher and Debit Note Voucher are same. So just like Purchase Voucher, you can record transaction in Debit Note either in Accounting Invoice or Item Invoice.

A Debit Note can be entered in voucher or Invoice mode (either Accounting / Items). Debit Note can be entered in voucher or Invoice mode.

You need to enable the feature in F11: Accounting or Inventory features.

- To use it in Voucher mode you need to enable the feature in F11: Accounting Features - Use debit and credit notes.
- To make the entry in Invoice mode enable the option F11: Accounting Features - Record debit notes in invoice mode.

To go to Debit Note Entry Screen,

- Go to Gateway of Tally > Accounting Vouchers.
- Click on Ctrl+F9: Debit Note on the Button Bar or press Ctrl+F9.

2.22.2 Inventory Vouchers

We will discuss the following list of Inventory Vouchers in Tally ERP 9

1. Purchase Order (Alt+F4)

Order Processing in Tally.ERP 9 can be classified into:

i. Purchase Order Processing

ii. Sales Order Processing and

iii. Job Order Processing.

a. Job Work Out Order

b. Job Work In Order

In Tally.ERP 9, Order Processing is linked to Inventory. This allows tracking of the order position for a Stock Item. Using this you can track the arrival of goods ordered and whether the ordered Stock Item are delivered on time etc.

When the order is placed with the suppliers for the supply of goods, the items, quantities, date of receipt, and so on, details are given with the Purchase Order Number. Later, when these goods are received, the Purchase Order is tracked for the Order Details either in the receipt note or in the purchase Invoice.

The Outstanding Purchase Order reports are available in Tally.ERP 9. It is possible to know the order position of any item in the Stock Summary. Separate Purchase Order Outstanding report and Purchase Order Summary report are also available.

Go to Gateway of Tally > Inventory Vouchers > Ctrl+F2 (Order Vouchers) > Alt+F4: Purchase Order to view the Order Voucher Creation screen.

2. Sales Order (Alt+F5)

In your business, if you are following the process of raising a sales order for each sales transaction, you can do the same in Tally.ERP 9. You can record a sales order, raise a delivery note and link it to this order, and then link them to the sales invoice. You can use the reports to track the outstanding sales orders.

When you receive an order from a customer, you may need to provide the details of items, quantities, date of delivery, and so on, with a Sales Order Number. When these goods are delivered, this sales order number will be used to track the order details either in the delivery note or in the sales invoice.

Go to Gateway of Tally > Inventory Vouchers > Ctrl+F2 (Order Vouchers) > Alt+F5: Sales Order to view the Order Voucher Creation screen.

3. Delivery Note (Alt+F8)

By using this voucher you can record the Stock delivered to parties. If there is any Sales Order from the party that has been received, by selecting the appropriate Sales Order, you can view the entire information. For example, Stock delivered to the party against an order.

The Delivery Note Voucher is used for recording goods delivered to a customer.

To pass the Delivery Note voucher,

Go to Gateway of Tally > Inventory Vouchers > Press Alt+F8.

4. Receipt Note (Alt+F9)

By using this voucher you can record the stock received from the parties. If any purchase order has already been raised to the party, you may bring the entire information within this Receipt Note by selecting the appropriate Purchase Order.

The Receipt Note Voucher is used for recording goods received from a supplier.

To pass the Receipt Note voucher,

Go to Gateway of Tally > Inventory Vouchers > Press Alt+F9.

5. Rejection In (Ctrl+F6)

This voucher is used to record goods received back from a customer after rejection. This Inventory voucher does not affect Accounting which affect inventory of the business only.

To pass the Rejection In voucher,

Go to Gateway of Tally > Inventory Vouchers > Press Ctrl+F6.

6. Rejection Out (Alt+F6)

This voucher is used to record goods returned back to suppliers that were rejected by the company. This Inventory voucher does not affect Accounting which affect inventory of the business only.

To pass the Rejection Out voucher,

Go to Gateway of Tally > Inventory Vouchers > Press Alt+F6

7. Stock Journal (Alt+F7)

Stock journal is a journal in which all types of stock adjustments are entered.

The stock adjustment may be due to the following reasons:

- Inter-Godown Transfer

  This is useful to transfer the goods from one location to another. The quantity of Stock remains the same, but the Location changes.

- Additional Cost/Expenses involved in the Transfer of goods.:

  You can also account the additional cost incurred in connection of transfer of materials from one location to another.

- Accounting for Wastage of stock or shortage of stock:

  There may be a shortage or wastage of stock items, the quantity may have got changes. In such cases, you have to enter a stock journal to account for the increase or decrease in the Stock Item.

- Manufacturing Process

  If you are involved in the manufacturing process in which raw materials are consumed and finished goods are produced, then you can create a manufacturing Journal Voucher also.

To view the Stock Journal Voucher,

Go to Gateway of Tally > Inventory Vouchers > Press the buttons Alt + F7

8. Physical Stock (Alt+F10)

Physical Stock Voucher is used for recording the actual stock which is verified or counted. It could happen that the Book Stocks and the Physical Stock do not match. It is not unusual that the company finds a discrepancy between actual stock and computer stock figure.

Go to Gateway of Tally > Inventory Vouchers > Press the buttons Alt+F10.

2.23 REPORTS IN TALLY ERP 9

On entering the vouchers, Tally.ERP 9 uses the same data and provides you with the management control reports in addition to all books and statements. The display of information is designed to allow a user to get the maximum benefit of the data that is entered.

The display screens of Tally.ERP 9 are dynamic and interactive. They are not spooled print files but are specially designed for the screen. What you see on the screen can be printed as well depending upon your printer's capabilities.

After going through this unit, you will be able to:

- Modify reports
- Configure the Balance Sheet
- View the Profit and Loss Account
- Define stock summary
- Understand the purpose of a trial balance report
- List the transactions of a day book
- Generate different types of books of account
- Explain the exception reports available in Tally.ERP 9

Only the Balance Sheet and Profit & Loss Account are displayed directly from the Gateway of Tally.ERP. Tally.ERP accords these statements the highest importance.

The Day Book contains all the vouchers for the day, including inventory vouchers. Its purpose is to show you a day's transactions.

The List of Accounts gives the tree structure of all your masters, namely, Groups, Ledgers, Stock items, Cost Centres, Currencies, etc.

Exception Reports are reports that track unusual transactions or balances.

To display Report in Tally ERP 9, go to the following category of Reports:

Display Financial Statements	• Display Balance Sheet • Display Profit & Loss Account • Display Receipts & Payment Account • Display Trial Balance
Display Books, Registers and Ledgers	• Display Sales Register • Display Cash Book • Display Bank Book • Display Statement of Accounts • Display Purchase Register • Display Journal Register • Display Day Book
Display Inventory Reports and Statements	• Display Stock Summary • Display Stock Items • Location/Godown Summary • Movement Analysis • Stock Ageing Analysis • Sales and Purchase Orders • Reorder Status • Display Batch-wise Reports
Management Information System Reports	• Receivables and Payables • Cost Centre Reports • Cash Flow Statements • Fund Flow Statements • Ratio Analysis Report • Exceptional Reports

2.24 KEYBOARD SHORTCUTS IN TALLY ERP 9

Shortcut Key	Description	Where to find
F1	Select a Company	Gateway of Tally
Alt+F1	Shut a Company	Gateway of Tally
F2	Change Date	Gateway of Tally
Alt+F2	Change Period	Gateway of Tally
F3	Change current company	Gateway of Tally
Alt+F3	Company Info	Gateway of Tally
F11	Features	Gateway of Tally
F12	Configuration	Gateway of Tally
F4	Contra voucher	Accounting Voucher
F5	Payment voucher	Accounting Voucher
F6	Receipt voucher	Accounting Voucher
F7	Journal voucher	Accounting Voucher
F8	Sales voucher	Accounting Voucher
F9	Purchase voucher	Accounting Voucher
Ctrl+F8	Credit Note voucher	Accounting Voucher
Ctrl+F9	Debit Note voucher	Accounting Voucher
Alt+F4	Purchase Order	Inventory Voucher
Alt+F5	Sales Order	Inventory Voucher
Alt+F8	Delivery Note	Inventory Voucher
Alt+F9	Receipt Note	Inventory Voucher
Ctrl+F6	Rejection In	Inventory Voucher
Alt+F6	Rejection Out	Inventory Voucher
Alt+F7	Stock Journal	Inventory Voucher
Alt+F10	Physical Stock	Inventory Voucher
F10	Reversing Journal	Non-Accounting Voucher

Ctrl+F10	Memorandum voucher	Non-Accounting Voucher
Ctrl+L	Optional Voucher	Non-Accounting Voucher
Ctrl+T	Post-dated Voucher	Non-Accounting Voucher
Ctrl+V	Toggle As Voucher and As Invoice	Purchase/Sales Voucher
Alt+I	Toggle As Accounting Invoice and As Item Invoice	Purchase/Sales Voucher
Ctrl+N	Calculator	All screen
Ctrl+M	Gateway of Tally	All screen
Ctrl+A	Accept the screen	All screen
Ctrl+Q	Quit Tally	All screen
Ctrl+Enter	Alter an Item	Item must be selected
Alt+C	Create an Item	Item must be selected
Alt+D	Delete an Item	Item must be selected
Page Up/Page Down	To display previous item	At Voucher Entry and Alteration screen

2.25 SUMMARY

- A computerised accounting system is an accounting information system that processes the financial transactions and events as per Generally Accepted Accounting Principles (GAAP).
- Accounting Package is classified into (a) Ready to use (b) Customised & (c)Tailored
- Tally is an ERP accounting software package used for recording day to day business data of a company. The latest version of Tally is Tally Prime.
- Features in Tally ERP 9 include (a) Accounting features (b) Inventory features & (c) Statutory/Taxation features.
- Accounting Masters include Groups & Ledgers

- By default, there are 28 groups, out of which 15 are primary groups and 13 are sub-groups.
- By default, there are 2 ledgers viz. Cash A/c and P&L A/c
- Inventory Masters include Stock Group, Stock Category, Godown/Location, Units of Measure & Stock Item.
- Stock Category & Godown is disabled by default, which needs to be enabled from F11: Inventory features.
- By default, there is one Godown named Main Location.
- There are total 20 Vouchers in Tally, which includes 8 Accounting Vouchers, 8 Inventory Vouchers and 4 Non-Accounting Vouchers.
- The Day Book contains all the vouchers for the day.
- The List of Accounts gives the tree structure of all your masters, namely, Groups, Ledgers, Stock items, Cost Centres, Currencies, etc.
- Exception Reports are reports that track unusual transactions or balances.

2.26 MODEL QUESTIONS

- Explain the needs for Computerized Accounting System.
- Explain the features of Computerized Accounting System.
- Explain in detail the Limitations of Computerized Accounting System.
- Explain the features of Tally ERP 9 in detail.
- Explain in detail benefits of Accounting Information System (AIS).
- Distinguish between Manual and Computerized Accounting System.
- Explain the steps to create a Company in Tally ERP 9.
- What are Groups and Ledgers in Tally ERP 9. Explain the steps to create a ledger in Tally.
- What are Vouchers in Tally ERP 9. Explain the types of Vouchers in Tally.
- Write a short note on AIS.
- Write a short note on Accounting Vouchers in Tally.
- Write a short note in Inventory Vouchers in Tally.
- Write a short note on Reports in Tally

2.27 MCQS

1. In Tally ERP 9, the keyboard shortcut for Calculator is _____

   a. Ctrl+L

   b. Ctrl+C

   c. Ctrl+M

   d. Ctrl+N

2. In Tally ERP 9, there are by default _____ and _____ ledgers.

   a. Cash, Profit & Loss A/c

   b. Bank, Profit & Loss A/c

   c. Cash, Petty Cash

   d. Bank, Cash

3. The keyboard shortcut to select a company is _____

   a. F2

   b. F1

   c. Alt+F1

   d. Alt+F2

4. The keyboard shortcut to change the period of the company is _____

   a. F2

   b. Alt+F2

   c. Alt+F1

   d. F3

5. Which of the following is not a category of vouchers in Tally ERP 9?

   a. Accounting Vouchers

   b. Inventory Vouchers

   c. Non-Accounting Vouchers

   d. Non-Inventory Vouchers

6. In Tally ERP 9, you can create maximum _____ companies

   a. 99

   b. 999

   c. 9999

   d. 99999

7. In Tally ERP 9, the keyboard shortcut to delete a company from Company Alteration screen is _____

   a. Alt+D

   b. Delete button

   c. Ctrl+D

   d. Alt+Shift+D

8. There are by default _____ primary groups and _____ sub-groups in Tally ERP 9

   a. 15,13

   b. 13,2

   c. 28,2

   d. 15,2

9. The keyboard shortcut to accept the screen in Tally ERP 9 is _____

   a. Alt+A

   b. Ctrl+A

   c. Escape button

   d. Ctrl+Q

10. The keyboard shortcut to switch between open companies is _____

    a. F3

    b. F2

    c. F1

    d. Alt+F3

❄❄❄❄❄❄❄

3

CONCEPT OF MIS REPORTS IN COMPUTER ENVIRONMENT

Unit Structure :

3.0 OBJECTIVE

- Analyse a complex computing problem and apply computing principles and other relevant disciplines to find solutions.
- Create, implement, and test a computing-based solution to meet a specific set of computing requirements within the context of the program's discipline.
- Effectively communicate in a variety of professional contexts.
- Recognise professional responsibilities and use legal and ethical principles to make informed decisions in computing practise.
- Work effectively as a member or leader of a team engaged in activities related to the discipline of the programme.

3.1.INTRODUCTION

MIS Report stands for Management Information System and is an umbrella term for a set of reports that provide a view of a business's day-to-day activities, allowing your business's functions to be analysed. They are required by a company's management to assess its performance and optimise decision-making. Business operations can involve hundreds of transactions per day, for example, and these will be documented. A sales

summary report is an example of a MIS report. These reports contain critical business transactions, which is why small business owners must understand these management control reports.

MIS reports are typically prepared for business management based on (automatically-)collected data about the company. MIS Reports take into account data from various sources, both digital and human. They are made up of various reports that cover various departments of a business and serve as a useful tool for evaluating a company's performance and making well-informed decisions. They can assist you in identifying issues, pressure points, bottlenecks, and opportunities within your organisation. MIS reports are likely to differ from company to company, depending on what needs to be viewed and why.

How do MIS Reports Work

An Types of MIS reports is prepared periodically (which is either monthly or quarterly in most cases). These reports are prepared by various departments in your organization and presented to the company's management team.

MIS reports focusing on raw data, trends, patterns in that data, and comparisons with relevant past data. MIS reports are also an effective tool for managers to track business operations across various departments. Furthermore, they provide clarity and enhance communication. They also help the company managers and the management team to make informed decisions, pinpoint and avoid problems, and capitalize on the current market trends.

For Example, if a decision about a new product launch has to be made, the MIS report will have current market trends and employee information. The data points in the MIS reports will help you make better decisions and improve the company's performance in both the short-term and long-term.

3.2 CONCEPT OF MIS

MIS Definition

Management Information System (MIS) is an integrated man/machine system for providing information to hold up the operations, management and decision-making functions in an organization.

\- G.B. Davis

A formal method of collecting timely information in a presentable form in order to facilitate effective decision making and implementation, in order to carry out organisational operations for the purpose of achieving the organisational goals.

-Walter I. Kennevan

A Management Information System is an organized portfolio of formal systems for obtaining, processing, and delivering information in support of the business operations and management of an organization.

-Zwass (1992)

MIS Meaning: A management information system is an acronym of three words, viz., Management, information, system. In order to fully understand the term MIS, let us try to understand these three words.

1. **Management**: Management is the art of getting things done through and with the people in formally organised groups.

2. **Information**: Information is data that is processed and is presented in a form which assists decision-making. It may contain an element of surprise, reduce uncertainty or provoke a manager to initiate an action.

3. **System**: A system is an orderly grouping of interdependent components linked together according to a plan to achieve a specific goal. The term system is the most loosely held term in management literature because of its use in different contexts.

Information System

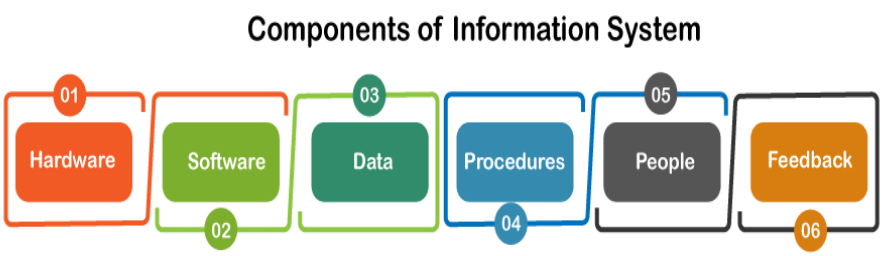
"Information system is set of **people, information technology**, and **business process** in order to achieve a business objective."

Information systems are a set of interconnected elements working together to collect, process, store, and distribute information to help coordination, visualization in an organization, analysis, and decision-making.

The Information system can be defined as a collection of **software, hardware**, and **telecommunications network** that people develop and use to **gather, create,** and **distribute useful data**, mainly in organizational settings.

In other words, an information system means a collection of interrelated components which work together to **gather, process, store,** and **break down** the information to help decision making.

Typical Components of Management Information Systems



Source: https://www.javatpoint.com/information-system-definition

1. Hardware

Hardware means **equipment** and **machinery**. This category encompasses the computer and all of its supporting equipment in modern information systems. The supporting devices contain input and output devices, communication devices and storage device. Hardware in pre-computer information systems may contain ledger books and ink.

2. Software

In an information system, software means computer programs as well as the manuals which support them. Computer program means the machine-readable instructions that tell circuitry in the system's hardware to work to generate helpful information from the data. In most cases, programs are stored on an input/output medium, such as a tape or disk. The software which is for pre-computer information systems comprised instruction for using them means the guidebook for a card catalog and the information regarding how the hardware was configured for use such as columns headings in the ledger book.

3. Data

Data means facts that systems use to generate valuable knowledge. Data is usually stored in machine-readable form on tape or disk until the computer requires them. The data in pre-computer information systems is usually stored in a human-readable format.

4. Procedures

Procedures mean rules which govern how an operation is performed in information system. "Procedures are for people what software is for hardware" is a general analogy that we used to clarify the importance of procedures in a system.

5. People

Every system requires individuals if the system is to be beneficial. People are often the most neglected part of the system, and they are possibly the factor that has the greatest impact on the success or failure of information systems.

This contains clients, yet additionally the individuals who operate as well as service the computers, those who support the network of computers, and the individuals who keep up the information.

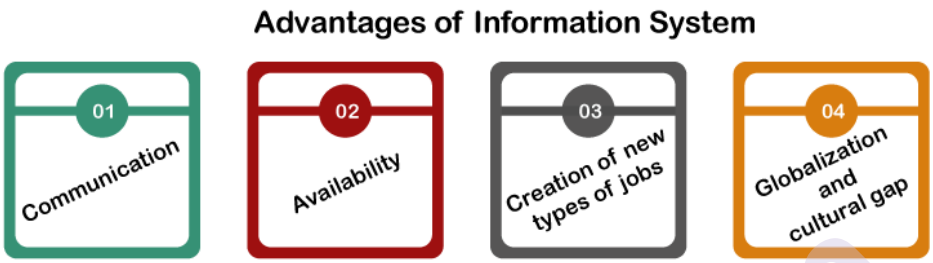
6. Feedback

Another component of an information system is feedback, which determines that an information system can be offered with feedback. However, this component is not needed to function.

Advantages of Information System

There are various advantages of the information system:

- Communication
- Availability
- Creation of new types of jobs
- Globalization and cultural gap



Communication

Using information technology, instant messaging, emails, voice, and video calls, communication become inexpensive, faster, and effective.

Availability

With the help of the Information system, it is possible for businesses around the world to be open around the clock. This implies that a business can be open anytime, anyplace, making buys from various nations simpler and more helpful. It likewise implies that you can have your products delivered right to your doorstep without making more effort.

Creation of New Types of Jobs

The creation of new and exciting jobs is another advantage of the information system. We can create various opportunities using IT such as computer programmers, Hardware and Software developers, Web designers, and Systems analysers.

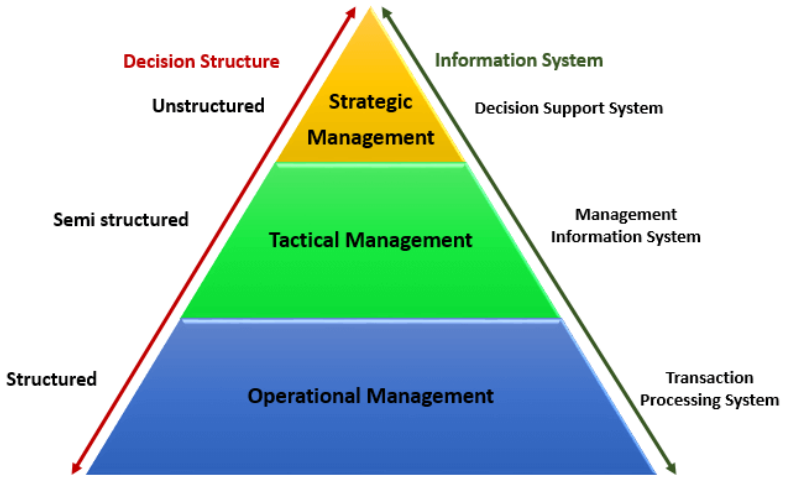
Globalization and Cultural Gap

We may reduce semantic, Geological, and some social constraints by implementing an information system. Sharing data, information, knowledge, communication, and connections between different nations, societies, and dialects are a lot easier.

Types of Information System

A typical organization is divided into operational, middle, and upper level. The information requirements for users at each level differ. Towards that end, there are number of information systems that support each level in an organization.

The following diagram illustrates the various levels of a typical organization.



Source: https://www.guru99.com/mis-types-information-system.html

Operational management level

- The operational level is concerned with performing day to day business transactions of the organization.
- Examples of users at this level of management include cashiers at a point of sale, bank tellers, nurses in a hospital, customer care staff, etc.
- Users at this level use make structured decisions. This means that they have defined rules that guides them while making decisions.

For example, if a store sells items on credit and they have a credit policy that has some set limit on the borrowing. All the sales person needs to decide whether to give credit to a customer or not is based on the current credit information from the system.

Tactical Management Level

- This organization level is dominated by middle-level managers, heads of departments, supervisors, etc. The users at this level usually oversee the activities of the users at the operational management level.
- Tactical users make semi-structured decisions. The decisions are partly based on set guidelines and judgmental calls. As an example, a tactical manager can check the credit limit and payments history of a customer and decide to make an exception to raise the credit limit for a particular customer. The decision is partly structured in the sense that the tactical manager has to use existing information to identify a payments history that benefits the organization and an allowed increase percentage.

Strategic Management Level

This is the most senior level in an organization. The users at this level make unstructured decisions. Senior level managers are concerned with the long-term planning of the organization. They use information from tactical managers and external data to guide them when making unstructured decisions.

Transaction Processing System (TPS)

Transaction processing systems are used to record day to day business transactions of the organization. They are used by users at the operational management level. The main objective of a transaction processing system is to answer routine questions such as;

- How printers were sold today?
- How much inventory do we have at hand?
- What is the outstanding due for John Doe?

By recording the day to day business transactions, TPS system provides answers to the above questions in a timely manner.

- The decisions made by operational managers are routine and highly structured.
- The information produced from the transaction processing system is very detailed.

For example, banks that give out loans require that the company that a person works for should have a memorandum of understanding (MoU) with the bank. If a person whose employer has a MoU with the bank applies for a loan, all that the operational staff has to do is verify the submitted documents. If they meet the requirements, then the loan application documents are processed. If they do not meet the requirements, then the client is advised to see tactical management staff to see the possibility of signing a MoU.

Examples of transaction processing systems include;

- **Point of Sale Systems** – records daily sales
- **Payroll systems** – processing employees salary, loans management, etc.
- **Stock Control systems** – keeping track of inventory levels
- **Airline booking systems** – flights booking management

Management Information System (MIS)

Management Information Systems (MIS) are used by tactical managers to monitor the organization's current performance status. The output from a transaction processing system is used as input to a management information system.

The MIS system analyses the input with routine algorithms i.e. aggregate, compare and summarizes the results to produced reports that tactical managers use to monitor, control and predict future performance.

For example, input from a point of sale system can be used to analyse trends of products that are performing well and those that are not performing well. This information can be used to make future inventory orders i.e. increasing orders for well-performing products and reduce the orders of products that are not performing well.

Examples of management information systems include;

- **Sales management systems** – they get input from the point of sale system
- **Budgeting systems** – gives an overview of how much money is spent within the organization for the short and long terms.
- **Human resource management system** – overall welfare of the employees, staff turnover, etc.

Tactical managers are responsible for the semi-structured decision. MIS systems provide the information needed to make the structured decision and based on the experience of the tactical managers, they make judgement calls i.e. predict how much of goods or inventory should be ordered for the second quarter based on the sales of the first quarter.

Decision Support System (DSS)

Decision support systems are used by senior management to make non-routine decisions. Decision support systems use input from internal systems (transaction processing systems and management information systems) and external systems.

The main objective of decision support systems is to provide solutions to problems that are unique and change frequently. Decision support systems answer questions such as;

- What would be the impact of employees' performance if we double the production lot at the factory?
- What would happen to our sales if a new competitor entered the market?

  Decision support systems use sophisticated mathematical models, and statistical techniques (probability, predictive modelling, etc.) to provide solutions, and they are very interactive.

  Examples of decision support systems include;

- **Financial planning systems** – it enables managers to evaluate alternative ways of achieving goals. The objective is to find the optimal way of achieving the goal. For example, the net profit for a business is calculated using the formula Total Sales less (Cost of

Goods + Expenses). A financial planning system will enable senior executives to ask what if questions and adjust the values for total sales, the cost of goods, etc. to see the effect of the decision and on the net profit and find the most optimal way.

- **Bank loan management systems** – it is used to verify the credit of the loan applicant and predict the likelihood of the loan being recovered.

Executive Information System (EIS)

An executive information system (EIS) is a decision support system (DSS) used to assist senior executives in the decision-making process. It does this by providing easy access to important data needed to achieve strategic goals in an organization. An EIS normally features graphical displays on an easy-to-use interface.

Executive information systems can be used in many different types of organizations to monitor enterprise performance as well as to identify opportunities and problems.

3.3 NEED OF MIS

Managers make decisions. Decision-making generally takes a four-fold path −

- Understanding the need for decision or the opportunity,
- Preparing alternative course of actions,
- Evaluating all alternative course of actions,
- Deciding the right path for implementation.

MIS is an information system that provides information in the form of standardized reports and displays for the managers. MIS is a broad class of information systems designed to provide information needed for effective decision making.

Data and information created from an accounting information system and the reports generated thereon are used to provide accurate, timely and relevant information needed for effective decision making by managers.

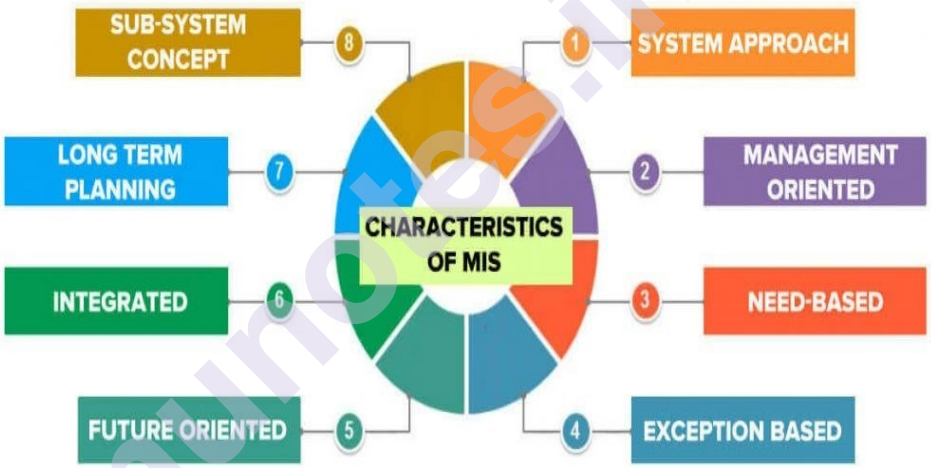
Management information systems provide information to support management decision making, with the following goals –

- Pre-specified and preplanned reporting to managers.
- Interactive and ad-hoc support for decision making.
- Critical information for top management.

MIS is of vital importance to any organization, because −

- It emphasizes on the management decision making, not only processing of data generated by business operations.
- It emphasizes on the systems framework that should be used for organizing information systems applications.
- Enterprise applications are specifically designed for the sole purpose of promoting the needs and objectives of the organizations.
- Enterprise applications provide business-oriented tools supporting electronic commerce, enterprise communication and collaboration, and web-enabled business processes both within a networked enterprise and with its customers and business partners.

3.4 CHARACTERISTICS OF MIS



1. **System approach:** MIS follows the system approach, which implies a step by step approach to the study of system and its performance in the light of the objective for which it has been constituted. It means taking an inclusive view at sub-systems to operate within an organization.

2. **Management-oriented:** The management-oriented characteristic of MIS implies that top-down approach needs to be followed for designing MIS. A top-down method says the initiation of system development determines management requirements as well as business goals. MIS implies the management dynamically to the system development towards the completion of management decision.

3. **As per requirements:** The design and development of MIS should be as per the information required by the managers. The required design and development information is at different levels, viz., strategic planning, management control and operational control. It

means MIS should cater to the specific needs of managers in the hierarchy of an organization.

4. **Future-oriented:** The design and development of MIS should also be future purpose so that the system is not restricted to provide only the past information.

5. **Integrated:** A complete MIS is a combination of its multiple sub-components to provide the relevant information to take out a useful decision. An integrated system, which blends information from several operational areas, is a necessary characteristic of MIS.

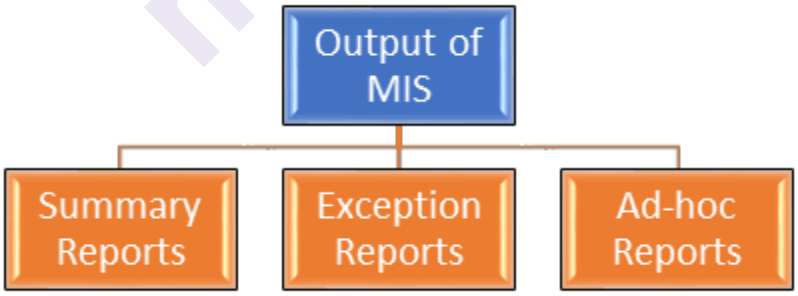
6. **Common data flows:**This concept supports numerous basic views of system analysis such as avoiding duplication, combining similar functions and simplifying operations. The expansion of common data flow is a cost-effectively and logical concept.

7. **Long-term planning:** MIS should always develop as a long term planning because it involves logical planning to get success of an organization. While developing MIS, the analyst should keep future oriented analysis and needs of the company in mind.

8. **Relevant connection of sub-system planning:** The MIS development should be decomposing into its related sub-systems. These sub-systems must be meaningful with proper planning.

9. **Central database:** it contains data in tabular form. The data base is responsible to operations like insertion, deletion, updation of records. This database covers information related to inventory, personnel, vendors, customers, etc. the data stored in the database

3.5 OUTPUT OF MIS



1.Summary Reports provide management with **important totals, averages, key data, and abstracts** on the activities of the organization. E.g. list of the total regular and overtime hours earned at each plant, list of total weekly sales, by salesperson, by product, and by sales region.

2.Exception Reports warn managers when results from a particular operation **exceed or do not meet** the expected standard for the organization. E.g. list of all plants that have logged more overtime hours than expected

for a week, list of those sales personnel whose sales fall in the top and bottom 10% of the organization.

3.Ad hoc reports/demand reports are reports that managers need, usually quickly, **that may never be needed again**. Ad hoc reports present information that the manager needs **to solve a unique problem**. E.g. list of the total number of employees absent during the week along with the hours or days missed. A manager might request these reports only when an exception report shows high overtime earnings at certain plants. The manager may ask for a number of ad hoc reports to identify the nature of the overtime problem.

3.6 MIS GUIDELINES FOR DEVELOPING MIS REPORTS

There are several different types of MIS reports. Which ones apply to you depends on several factors.

1. **Summary MIS report:** Summary reports aggregate all information and data to showcase a clear holistic picture of your business's finances.

2. **Trend MIS report:** Trend reports are used to compare your business's past performance with the present. This can help you understand how well your business, or parts of it, are performing.

3. **Sales MIS report:** Sales reports typically include an overview/ visual of products sold during a specific period (e.g., month or quarter). This helps you understand the sales variance in your company (i.e. the difference between budgeted and actual sales) as well as other factors, such as the geographical distribution of products sold.

4. **Profit MIS report:** Profit reports showcase the difference between actual and estimated profit generated by your company. This could also look at factors that led to profit or less in a specific period.

5. **Inventory MIS report:** Inventory reports help you understand and manage the products in your business's inventory. This should include the number of items in stock, best-selling products, top-selling categories of products, etc. This can help inform business decisions considerably.

6. **Cashflow MIS report:** Cash flow reports identify and show the exact amount of cash inflow and cash outflow in your company. The report will typically include cash flows from your company’s operations (the core business), and any investments and financing, such as external investors. This provides you with an insightful overview of the financial state of your company.

7. **Accounting MIS report:** Accounting reports refers to several different financial documents. This describes all reports concerned with a company's financial position, operational performance, and economic activities of the business.

8. **Exception MIS report:** Exception reports present all "exceptions", i.e. any abnormal or unusual circumstances within your business. This can help you identify problems and potential issues in your business early to react in time.

9.

MIS reports expected by different levels of management The three levels of management expect MIS reports from four different departments to assess the company's performance and make smart moves.

Levels of management / Departments	Sales and Marketing	Manufacturing and Production	Finance and Accounting	Human resources
Strategic level	Periodical sales trend and plan	Periodical production plan	Revenue generation plan	Employee growth planning
Tactical level	Region wise sales analysis	Inventory and production control analysis	Budget and profit analysis	Employee cost analysis
Operational level	Order processing	Control of material movement	Payable and receivable accounts	Employee record management

How to generate MIS Reports in Excel?

This method of MIS Reporting demands excellence in MS Excel or other spreadsheet tools.

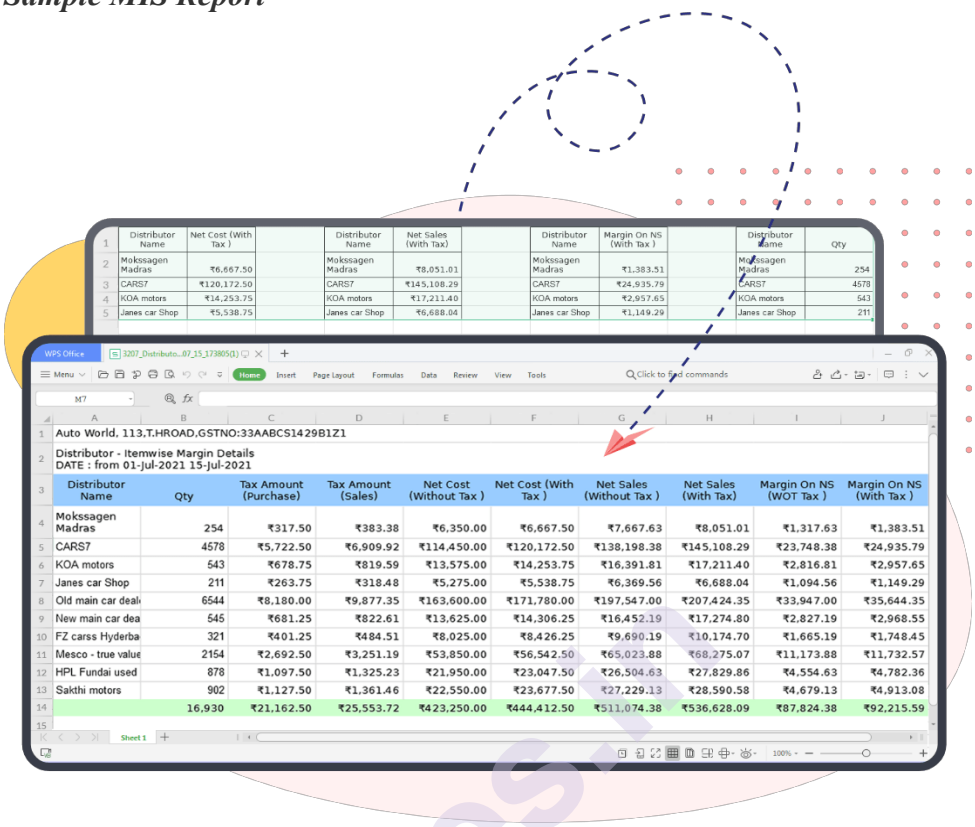
Step 1 : Raw data from multiple departments have to collected in order to structure the report and to decide the heading for rows and columns

Step 2 : Segregate the raw data and put them under respective headings. Apply filters to remove unnecessary information that won't contribute to decision-making

Step 3 : Goal is to prepare a dashboard template. It can be created with Excel formulas and pivot tables. However, the segregated data needn't be floating around the dashboard template. Create a new sheet in the report and move the segregated data to the depository sheet. Formulas can help you showcase the final results in the dashboard template

Note : Ensure headings are in the required format. E.g., the revenue column should have a currency format. Also, re-check the formulas applied at least thrice to avoid errors.

Sample MIS Report



Auto World, 113,T.HROAD,GSTNO:33AABCS1429B1Z1

Distributor - Itemwise Margin Details
DATE : from 01-Jul-2021 15-Jul-2021

Distributor Name	Qty	Tax Amount (Purchase)	Tax Amount (Sales)	Net Cost (Without Tax)	Net Cost (With Tax)	Net Sales (Without Tax)	Net Sales (With Tax)	Margin On NS (WOT Tax)	Margin On NS (With Tax)
Mokssagen Madras	254	₹317.50	₹383.38	₹6,350.00	₹6,667.50	₹7,667.63	₹8,051.01	₹1,317.63	₹1,383.51
CARS7	4578	₹5,722.50	₹6,909.92	₹114,450.00	₹120,172.50	₹138,198.38	₹145,108.29	₹23,748.38	₹24,935.79
KOA motors	543	₹678.75	₹819.59	₹13,575.00	₹14,253.75	₹16,391.81	₹17,211.40	₹2,816.81	₹2,957.65
Janes car Shop	211	₹263.75	₹318.48	₹5,275.00	₹5,538.75	₹6,369.56	₹6,688.04	₹1,094.56	₹1,149.29
Old main car deal	6544	₹8,180.00	₹9,877.35	₹163,600.00	₹171,780.00	₹197,547.00	₹207,424.35	₹33,947.00	₹35,644.35
New main car dea	545	₹681.25	₹822.61	₹13,625.00	₹14,306.25	₹16,452.19	₹17,274.80	₹2,827.19	₹2,968.55
FZ carss Hyderba	321	₹401.25	₹484.51	₹8,025.00	₹8,426.25	₹9,690.19	₹10,174.70	₹1,665.19	₹1,748.45
Mesco - true value	2154	₹2,692.50	₹3,251.19	₹53,850.00	₹56,542.50	₹65,023.88	₹68,275.07	₹11,173.88	₹11,732.57
HPL Fundai used	878	₹1,097.50	₹1,325.23	₹21,950.00	₹23,047.50	₹26,504.63	₹27,829.86	₹4,554.63	₹4,782.36
Sakthi motors	902	₹1,127.50	₹1,361.46	₹22,550.00	₹23,677.50	₹27,229.13	₹28,590.58	₹4,679.13	₹4,913.08
	16,930	₹21,162.50	₹25,553.72	₹423,250.00	₹444,412.50	₹511,074.38	₹536,628.09	₹87,824.38	₹92,215.59

3.7 FUNCTIONAL ASPECTS OF THE MIS

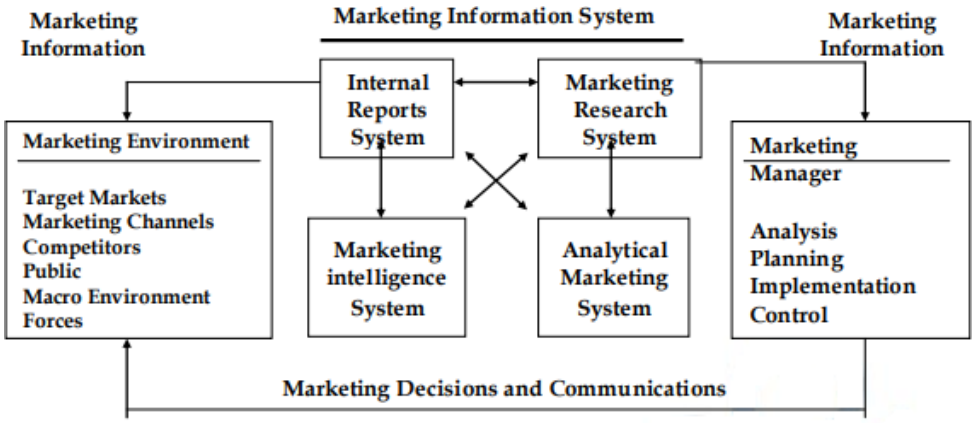
Functional MIS

(A) MIS for Marketing: In order to pursue market opportunities as well as anticipate marketing problem, manager need to collect comprehensive and reliable information. Managers cannot carryout marketing analysis, planning, implementation and control without monitoring and researching customers, competitors, dealers and their sales and cost data. Every firm has many information flows of interest to marketing management. Many companies are studying their executive ‘s information needs and design information system for marketing to meet these needs. Instead of plethora of unrelated data, an MIS combines various inputs and present integrated reports.

Definition: Marketing Information System is a continuing and interacting structure of people, equipment and procedures to gather, sort, analyze, evaluate, and distribute pertinent, timely and accurate information for use by marketing decision makers to improve their marketing planning, implementation and control activities.

Components of Marketing Information System: As shown in figure below, the box on the left shows components of the marketing environment that manager must monitor. Trends in the marketing environment are picked up and analyzed through four subsystems making up the marketing information system- Internal Accounting System,

Internal Accounting System is the most basic information system used by



marketing executives. It is the system that reports orders, sales inventory levels, receivable, payable. By analyzing the information, marketing managers can spot important opportunities and problems.

- **The Order Shipping Cycle:** Sales representatives, dealers and customers dispatch orders to the firm. The order department prepares multi-copy invoice and sends them to various departments. Out of stock items are back ordered. Shipped items are accompanied and sent to various departments. The company wants to carryout these steps quickly and accurately. The computer is harnessed to expedite the order shipping billing cycle.

- **Improving the Timeliness or Sales Reports:** Marketing executives receive sales reports some times, after the sales have taken place. Many companies complain that sales are not reported fast enough in their company. Marketing information system can improve these things rapidly.

- **Designing a User Oriented Report System:** In designing an advanced sales information system, the company should avoid certain pitfalls.

The marketing information system should represent a cross between what Managers think they need, what managers really need and what is economically feasible. Management information system should provide the reports for all marketing departments. Information system can delete the unwanted system from the survey and from other departments and prepare reports which are required by different persons of marketing department.

(B) MIS for Personnel Management: Personnel management has the primary objective of providing suitable manpower in number and with certain ability, skills and knowledge, as the business organization demands from time to time. Its goal is to control personnel cost through continuous increase in manpower productivity resorting to the following techniques:

a) Motivation through Leadership and Job Enrichment

b) Grievance Handling

c) Structuring the Organization

d) Promotion and Rewards through Performance Appraisal

e) HRM through Training and Upgrading the Skills

The information and scope of personnel function have resulted in greater complexity in field. There is need to cope with incredible volume of information and maintaining it. There is need to classify, reclassify and cross this information. This can be achieved by computerized personnel system which enables personnel management to manage more efficiently and effectively and to provide more positive services to the organization.

Input for Personnel Development: The following documents serve as the input in personnel information system:

- Productivity Data on the Job
- Industry Data on Manpower, Skills, Qualification
- Bio-Data of Self and Family
- Personnel Application Form
- Attendance and Leave Record
- Appraisal Form
- Appointment Letter
- Wage/ Agreement
- Record Sources of Manpower, University, Institutes, and Companies

Components of Personnel Information: A computer based personnel information system is designed to support the operational, managerial and decision making functions of the personnel division in an organization. Following are the components of the personnel management information system:

i) **Establishment Records:** Establishment relates to the setting up of budgets for appropriate staff levels and grades throughout the organization. The system should encompass these budgeted posts and report on variations between actual staff numbers and the budget numbers.

ii) **Recruitment Records:** Details of all vacancies and applicants should be held by the system. These should show the status of each vacancy and of each applicant and should perform as much as possible of the administrative process. This will generally mean that the system should interface with a word processing system.

iii) **Personnel Records:** These relate to identification data, current and historical salary and allowances data and various employees attributes such as grades and key dates.

iv) **Pensions Records:** The system maintains all details of service entitlements of employees, contribution by both the employee and the organization to pension scheme, details of dependents, spouse and children, data required for actuarial purpose to verify the availability of the scheme and details and entitlements of employees who have become pensioners.

v) **Training Records:** These include data relating to each employees qualification, skills and experience. The system would also hold details of internal and external training courses and its relevant details.

vi) **Absence Records:** The system should allow for the recording of various absence types like sick leave, special leave etc. Input of this sub-system should be automatically reflected in the establishment sub-system.

Industrial relations Records: The system should hold data to assist management in negotiations and planning for alternative strategies. Much of this would be held for normal administrative purpose. It is the facility to extract the data in meaningful terms, to able to project forward and to test the impact of applying various rules and scenarios.

(C) MIS for Personnel Management: Personnel management has the primary objective of providing suitable manpower in number and with certain ability, skills and knowledge, as the business organization demands from time to time. Its goal is to control personnel cost through continuous increase in manpower productivity resorting to the following techniques:

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g) Grievance Handling

h) Structuring the Organization

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(D) MIS for Financial Management: Financial management function has a primary objective of meeting the financial needs of the business. The second objective of FM is to meet the statutory compliance by way of declaring the auditing financial result, submitting reports and returns to the govt. and Tax authorities and fulfill the obligations to the shareholders. FM uses variety of tools and techniques like Break Even Analysis, ABC Analysis, Ratio Analysis, Management Accounting and Cost Analysis.

Input Documents:

- Receipts from customers, authorities, employees, share holders, financial institution and others.
- Payment to suppliers, authorities, share holders, financial institutions and others.
- Data from stock exchange on the shares prices consolidated financial results of the other companies etc.

Transactions are payments and receipts and they are documented through journal vouchers, bills, debit notes, credit notes, receipts and transfer documents.

Application of Financial Management Information System: The major application of financial management information system includes financial accounting system, which accounts for the financial transactions of the company and produces financial results for the company. It produces balance sheet for the company where the performance of the company is published in standard format prescribed by the govt. The system is made so comprehensive that it not only collects financial data but also collects data on different matters such as job, department, and division and so on. It forms a basis for certain reports which are required by the top level management. The users of the financial data base are finance managers, cost controller, auditors, material managers, marketing managers, company secretaries and the top management.

(E) MIS for Production Management: The objective of production management function is to provide manufacturing services to the organization. This involves the manufacturing of products of a certain specified quality and within certain costs in a stipulated time, fulfilling the promises given to the customer.

The production management function is supported by other functions like production, planning and control, industrial engineering, maintenance and quality control. It has a very strong interface with materials management function. The organization of production management differs according to

the types of production i.e. job shop or continuous. It also varies with the production policy of the organization, like whether the production is initiated against a customer order or for stock.

The system methodology differs with respect to the manufacturing technology the organization has adopted. The goals of the production management are fuller utilization of the manufacturing capacity, minimal rejection, maximum uptime of plans and equipments meeting the delivery promises. The function is of key importance when business strength is in technology and manufacturing, and the market for product and services exist. The function is pegged with the responsibility of managing high investment in plant, equipment and machinery. It also has to control the large labour force at its disposal.

Inputs of Production Management Information System: The production management is conducted through innumerable transaction. They relate to planning, issuing and controlling the various task involved in the course of production.

i) Process Planning Sheet
ii) Quality Assurance Rating Form
iii) Production Schedule
iv) Process Planning Sheet
v) Job Cards
vi) Finished Goods Advice
vii) Material Requisition
viii) Customer Order
ix) Breakdown Advice
x) Material requirement
xi) Production Programme

The production management also uses standards and norms extensively developed over a period of time as input in the system. These are generally known as production rate available capacity, labour components, material usage standards, rejection norms etc.

Documents mentioned above are indicative and may be more or less different, depending upon the type of production and nature of production of industry. The input data in each transaction would also vary from industry to industry as would the production methodology adopted by the organization. The system and procedures used by the organization in performing the production function also vary respectively.

Components of Production Management Information System: The components of production management information system include:

a) Sales department to find out what the customer wants and to compare this with what the firm can provide.

b) Design department to design new requirements and make modifications in established items either to bring them up to date or to make them meet a specific requirement of the customer.

c) Purchasing department buys the material required at the best possible price and on the most reliable delivery to make the various items either on one off basis for individual job or replenish material held in the stores on maximum and minimum levels

d) Manufacturing process sees that the parts are produced as economically as possible for delivery at the time required by the customer and to meet the standards set by the design department.

3.8 PROBLEMS OF MIS

Lack of Strategy

Many of the most common MIS issues can be traced back to a lack of a solid strategy. Information systems leaders are well aware of the many tools available to gather data on their network. But putting that information to use is often a challenge.

At one time, technology departments served as a separate operation, providing tech support and keeping an organization's server equipment running. Today, MIS leadership often sits alongside other business leaders, working together to ensure that the technology being used supports the overall mission of the company moving forward.

Meeting Organizational Needs

MIS plays an ever-increasing role in organizations, with professionals relying on technology for every aspect of operations. Sales and marketing rely heavily on customer relationship software to track client interactions, for instance, while accounting needs its own software for billing, invoicing and financial tracking. With more than half of all companies now relying on big data analytics, MIS is playing an even more important role. Before making a decision, today's management teams are likely to pull reports on existing activity to ensure they use facts rather than make educated guesses.

Attracting and Retaining Top Talent

For at least the past couple decades, the growth in technology has outpaced the number of people entering the field. Over the past seven out of 10 years, IT positions have been in the top 10 of jobs with the most hiring challenges, as documented by ManpowerGroup. The professionals most in demand include developers and programmers, database administrators and IT leaders and managers.

Even as an increasing number of businesses shift to cloud software, the IT shortage continues to affect businesses. If cloud technology providers have difficulty finding professionals to support the applications their

clients use, the businesses will see issues. Even with cloud technology, though, many organizations find they still need to have an MIS specialist on staff to ensure the business meets its goals.

Keeping Up with Change

If one thing is for certain in information technology, it's that nothing will remain the same for long. From one year to the next, innovations mean that software needs to be upgraded and even replaced. In order to remain competitive, businesses have to keep up with this, investing in software that will give them an edge.

As businesses respond to those changes, though, they face a challenge in getting employees on board with adjusting what they do. At one time this was simply training employees to go from old paper-based processes to using computers in the first place. Today, managers have to onboard new systems while ensuring they provide employees what they need to be productive.

Integrating New Technologies

Although there are plenty of comprehensive solutions, businesses will inevitably find that they have multiple types of software operating at once. This includes general administrative tools like Microsoft Office, as well as specialized tools for accounting, customer relationship management and project-management tools, among many others. Ensuring all these tools work together is essential since otherwise, employees will find they have to duplicate processes.

Complicating matters is the fact that employees no longer work using just one dedicated computer on a desk in an office space. Many employees work in the field, using laptops and tablets. You'll also have numerous cell phones in addition to the laptop and desktop computers your employees use, bringing challenges to providing support without risking security.

3.9 KNOWLEDGE REQUIRED FOR STUDYING MIS

5 Essential Information System Skills

Whether you're hoping to move up within an IT department leadership structure or master a highly specific technology such as information system, the following competencies can be vital additions to your resume.

1. Problem Solving

Being a logical and motivated problem solver is one of the main requirements of numerous IT roles. PayScale specified that information systems managers today must be able to resolve situations satisfactorily, no matter how complicated or difficult they become. This is a matter of logic, attention to detail, and critical-thinking skills as much as tech knowledge.

2. Management Skills

Rise high enough on the organization chart in IT and you aren't just managing technology, you'll also have to develop and direct people. This is where human resources skills come in. IT leaders have to motivate, develop, and guide people as they work, which falls outside of the scope of technical knowledge. When considering the strengths and weaknesses of candidates for promotion, hiring managers may opt for applicants who have proven they can lead, making empathy and awareness of others' reactions important traits.

3. Specialized Industry Knowledge

Each knowledge has unique requirements regarding IT. Information systems in healthcare, for instance, are bound by security and privacy unique to the sector. Depending on the type of role you're hoping to take on, you should ensure your expertise matches up with the skills in highest demand in that industry vertical.

4. Computer Science and Programming

The necessary balance of hard technological skills and interpersonal expertise will depend on the exact job description of the career you're seeking. With that said, taking on an information systems role means understanding a wide variety of tech tools and the state of the art in IT. Even if you are not expected to do programming work directly, your ability to oversee others and make investments will rely on technical know-how.

5. Security Awareness

The connecting thread between all companies, non profit organizations, and government organizations today is the need for technological security. A cyberattack can have long-lasting consequences for an organization, and leaders will be called on to ensure protective systems are up to industry standards. Security aptitude has the twofold purpose of preventing problems and ensuring the company is in compliance with regulations for its sector.

3.10 MANAGEMENT INFORMATION SYSTEM AND COMPUTER

Translating the real concept of the MIS into reality is technically, an infeasible proposition unless computers are used. The MIS relies its ability to store, process, retrieve and communicate with no serious limitations.

The variety of the hardware having distinct capabilities make it possible to design the MIS for a specific situation. For example, if the organization needs a large database and very little processing, a computer system is available for such a requirement. Suppose the organization has multiple business locations at long distances and if the need is to bring the data at one place, process, and then send the information to various locations, it is possible to have a computer system with a distributed data processing

capability. If the distance is too long, then the computer system can be hooked through a satellite communication system.

The ability of the hardware to store data and process it at a very fast rate helps to deal with the data volumes, its storage and access effectively. The ability of the computer to sort and merge helps to organize the data in particular manner and process it for complex lengthy computations. Since the computer is capable of digital, graphic word, image, voice and text processing, it is exploited to generate information and present it in the form which is easy to understand for the information user.

The software, an integral part of a computer system, further enhances the hardware capability. The software is available to handle the procedural and nonprocedural data processing. For example, if you want to use a formula to calculate a certain result, an efficient language is available to handle the situation. If you are not required to use a formula but have to resort every time to a new procedure, the nonprocedural languages are available.

The advancement in computer and the communication technology has made the distance, speed, volume and complex computing an easy task. Hence, designing the MIS for a specific need and simultaneously designing a flexible and open system becomes possible, thereby saving a lot of drudgery of development and maintenance of the system. The concept of user friendly systems and the end user computing is possible, making information processing a personalized function. However, the application of the management principles and practices in today's complex business world is possible only when the MIS is based on a computer system support.

3.11 SUMMARY

A management information system provides data to identify non-performing areas and leverage trends and patterns. Not having an effective, functional MIS system can leave managers guessing in the dark. A management information system will help your company reach a higher level of efficiency, enable you to make more rational business decisions, improve communication between people in your company, and leverage your strengths.

An MIS system is essential for any business owner who is serious about improving their company's performance. Without an MIS system, managers have to make decisions based on trial-an-error, rather than relying on data. Most companies have leveraged the power of an MIS system. Various software are also available to help companies speed up the process of data collection and visualization in the MIS reports.

3.12 MODEL QUESTIONS

Theory Questions

A. Explain the applications of MIS/ Explain the functional areas of MIS.

B. Explain MIS Reports and Outputs in detail.

C. Explain problems in MIS.

D. Explain the reasons for failure of MIS.

E. Explain Characteristics of MIS.

F. Explain Components of Information System.

Short Notes

A. Short note on Role of MIS

B. Short note on Marketing MIS

C. Short Note on Manufacturing MIS.

D. Types of MIS Reports

E. Skills Requirement for understanding MIS

Multiple choice Questions

1. Hardware, software, procedures, people and organization form a part of _____

   a. Information Technology

   b. Management Information System

   c. Information and Communication Technology

   d. **Information System**

2. The decision taken by the Tactical management is usually _____

   a. Structured

   b. Long term

   c. Unstructured

   d. **Semi structured**

2. At the top of the 4-tier architecture, we have _____ type of Information System

   a. **EIS**

   b. MIS

   c. DSS

   d. TPS

3. _____ covers the planning, control, and administration of the operations of a concern.

   a. **Management**

   b. Information

   c. System

   d. TPS

4. MIS helps the junior management personnel by providing them _____ data.

   a. tactical

   b. **operational**

   c. strategic

   d. unprocessed

❄❄❄❄❄❄❄

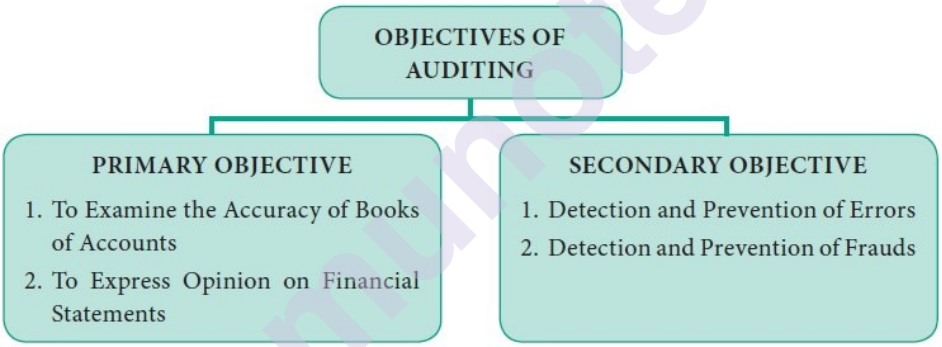
4

IT AND AUDITING

Unit Structure :

4.0 OBJECTIVE

The objective of an audit is to express an opinion on financial statements. The auditor has to verify the financial statements and books of accounts to certify the truth and fairness of the financial position and operating results of the business. Therefore, the objectives of audit are categorized as primary or main objectives and secondary objectives.



The primary or main objective of audit is as follows:

1. To Examine the Accuracy of the Books of Accounts

An auditor has to examine the accuracy of the books of accounts, vouchers and other records to certify that Profit and Loss Account discloses a true and fair view of profit or loss for the financial period and the Balance Sheet on a given date is properly drawn up to exhibit a true and fair view of the state of affairs of the business. Therefore the auditor should undertake the following steps:

- Verify the arithmetical accuracy of the books of accounts.
- Verify the existence and value of assets and liabilities of the companies.

- Verify whether all the statutory requirements on maintaining the book of accounts has been complied with.

2. To Express Opinion on Financial Statements

After verifying the accuracy of the books of accounts, the auditor should express his expert opinion on the truth ness and fairness of the financial statements. Finally, the auditor should certify that the Profit and Loss Account and Balance Sheet represent a true and fair view of the state of affairs of the company for a particular period.

4.1 INTRODUCTION

Auditing originates from the Latin term "Audire", which means "to hear," - just as in ancient times auditors used to listen to officers and people of authority to confirm the validity of their words. Over the years, the role of auditing evolved to verifying written reports: specifically, the financial records of individuals and businesses. The audit is an intelligent and critical examination of the books of accounts of the business. Auditing is done by the independent person or body of persons qualified for the job with the help of statements, papers, information and comments received from the authorities so that the examiner can confirm the authenticity of financial accounts prepared for a fixed term and report that:

- The balance sheet exhibits an accurate and fair view of the state of affairs of concern;
- The profit and loss accounts reveal the right and balanced view of the profit and loss for the financial period;
- The accounts have been prepared in conformity with the law.

Thus, it will be seen that the duty of an auditor is much more than a mere comparison of the balance sheet and accounts with the books. But, apart from doing this, he has to satisfy himself according to his information and the explanations given to him.

Definition of Auditing

"An audit is an examination of accounting records undertaken with a view of establishing whether they correctly and completely reflect the transactions to which the purport to relate." –**Lawrence R. Dickey**

"Audit is defined as an investigation of some statements of figures involving examination of certain evidence, so as to enable an auditor to make a report on the statement." –**Taylor and Perry**

"An audit denotes the examination of balance sheet and profit and loss accounts prepared by others together with the books of accounts and vouchers relating thereto such in such a manner that the auditor may be able to satisfy himself and honestly report that in his opinion such balance sheet is properly drawn up so as to exhibit a true and correct view of the

state of affairs of a particular concern according to the information and explanations given to him and as shown by the books." **-F.R.M De Paula**

"Auditing is a systematic examination of the books of records of business or other organization in order to ascertain or to verify and to report upon the facts regarding its financial operations and the result thereof." –**Prof. Montgomery**

"Audit such an examination of the books of accounts and vouchers of a business as will enable the auditor to satisfy himself that the balance sheet is properly drawn up so as to give a fair and true view of the state of affairs of the business and the whether the profit and loss of accounts gives a true and fair view of profit and loss for the financial period according to the best of his information and explanations given to him and as shown by the books and if not in what respect he is not satisfied." –**Spicer & Pegler**

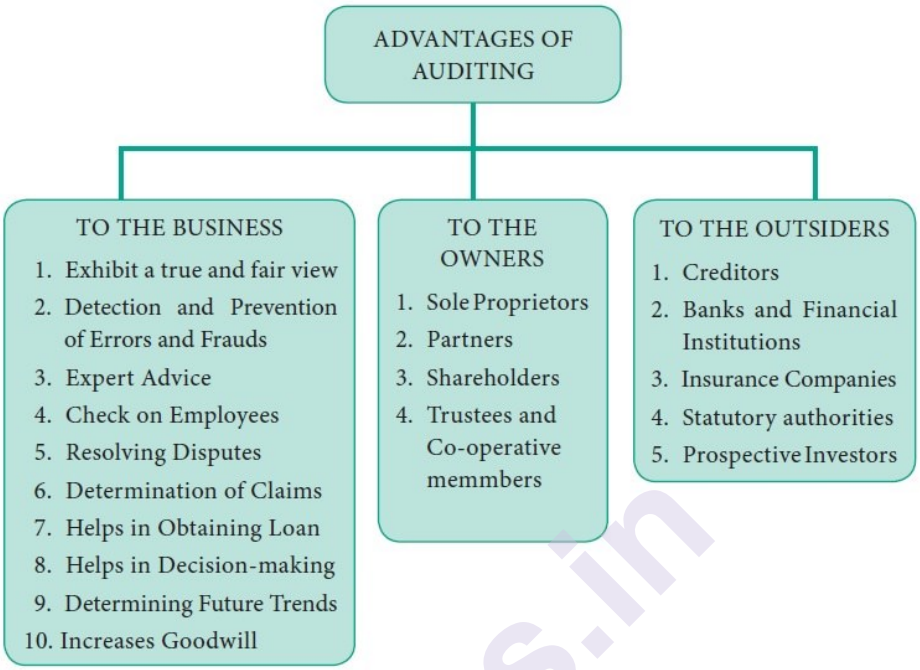
"Audit may be said to be verification of the accuracy and correctness of the books of accounts by an independent person qualified for the job and not in any way connected with the preparation of such accounts." **-J.B. Bose**

"Audit is not an inquisition and its mission is not one of fault finding. Its purpose is to bring to the notice of the administration lacunae in his rules, regulations and lapses, and to suggest possible ways and means for the execution of plans and projects with greater expedition, efficiency and economy." –**A.K. Chandra**

Features (or) Characteristics of Auditing

- It is a systematic and independent examination of financial information of a concern.
- Its main motive is to detect errors and frauds in the books of accounts and financial statement.
- It is conducted either by independent or body of persons who possess in depth knowledge and extensive practical training.
- It ensures the correctness of Trading, Profit and Loss Account and Balance
- Sheet whether it reflects a true and fair view of the state of affairs of the business.
- It further ensures that the financial statements follow the accounting standards.

Auditing provides benefits to the business, owners and to the outsiders in the following ways:



I. Benefits to the Business

1. **Exhibits a True and Fair View of the Financial Statements:** Audited accounts enables to reveal that the Profit and Loss Account and Balance Sheet of the business concern shows a true and fair view of the state of affairs of the business concern.

2. **Detection and Prevention of Errors and Frauds:** When books of accounts are audited, errors and frauds can be detected and necessary action can be taken to prevent it.

3. **Expert Advice:** Auditors who possess professional outlook provide expert advice to the company on various aspects such as tax matters, internal check, internal control and submission of various reports to the statutory authorities, preparation of project reports etc.

4. **Check on Employees:** When accounts are audited it creates a moral pressure on the employees to be very cautious and regular in their work, as a result the chances of errors and frauds will be minimized.

5. **Helps in Resolving Disputes:** Audited accounts provides a basis for settling disputes and conflicts among the partners in the case of partnership firm and to settle disputes with regard to bonus, wages etc. in the case of companies.

6. **Helps in Determination of Claims:** An insurance company settles claims to the companies for the loss due to damage of business property only on the basis of audited accounts.

7. **Helps in Obtaining Loan:** Loans can be easily borrowed from banks and other financial institutions on the basis of audited accounts, as the audited accounts authenticate the truthfulness of the books of accounts and financial statements.

8. **Helps in Decision-Making:** Audited accounts are relied upon for the purpose of decision-making by the management.

9. **Helps to Determine Future Trends:** By comparing the audited accounts with past years, the trend of financial activities can be determined. On the basis of review, weaknesses are found out and policies for the future period can be determined.

10. **Increase in Goodwill:** Audit of business on a regular basis increases confidence to the interested parties and general public, as a result goodwill of the business can be enhanced.

II. Benefits to the Owners

1. **Benefits to the Sole Proprietors:** Audited accounts provide assurance to the proprietor about the accuracy of accounts maintained by his employees and also enables to know the financial performance of the business. It further enables the proprietor to obtain loan and in computation of income tax liability.

2. **Benefit to the Partners:** In case of partnership business, audited accounts help the partners in settlement of accounts among the partners at the time of admission, retirement or in the case of death of a partner.

3. **Benefit to the Shareholders:** Share holders are the owners of the company. With the help of audited accounts, they get a real picture of the financial position of the company and that directors and managing directors have not taken any undue advantage of their position.

4. **Benefit to Trust, Co-operative Societies:** Audit of accounts of co-operative societies and Trusts provide evidence that the interest of the beneficiaries and members are properly protected.

III. Benefits to the Third Parties

1. **Bank and Financial Institutions:** Banks and other financial institutions grant loan to the business concern on the basis of audited financial statements.

2. **Creditors:** Creditors who supply goods to the business may assess the solvency and liquidity position of the business on the basis of audited accounts.

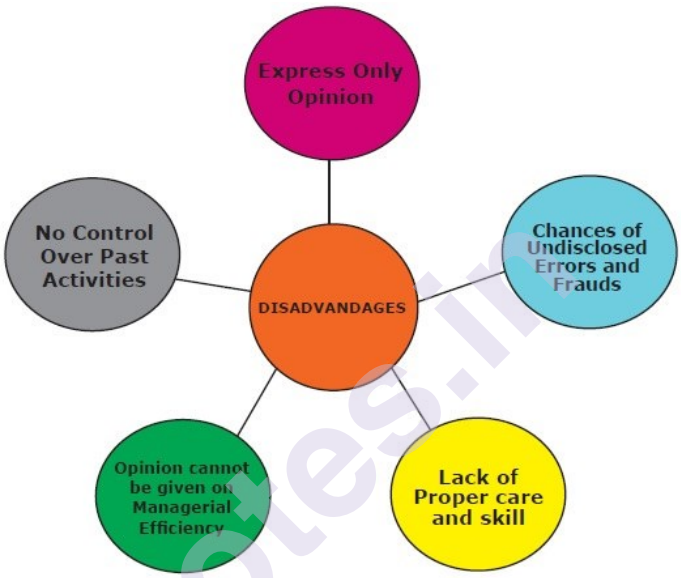
3. **Insurance Companies:** For settlement of insurance claims, insurance companies can rely on audited accounts.

4. **Statutory Authorities:** Statutory authorities like income tax, sales tax, wealth tax etc. accept audited statements for determining the liability which arises due to income, sales and wealth.

5. **Prospective Investors:** Prospective investors who wish to invest money in shares and debentures of a company rely on audited accounts.

Limitations of Auditing

The limitations or disadvantages of auditing are as follows:



1. **Gives Opinion:** After the completion of audit, an auditor gives only the opinion regarding true and fair view of the books of accounts and financial position of the business. Therefore, an auditor is not an insurer; he does not give guarantee regarding financial reflections of the business.
2. **Chances of Undisclosed Errors and Frauds:** An Auditor has to depend on many financial data and statements supplied by the management which may be wrong or misleading. Therefore, there may be some undisclosed errors and frauds in the books of accounts.
3. **Lack of Proper Care and Skill:** Often it is seen that an Auditor does not apply proper care and skill to verify the books of accounts and take it as a routine matter. As a result, the books of accounts do not reflect true and fair view of the financial position of the business.
4. **No Evaluation of Managerial Efficiency:** An Auditor is not an advisor, therefore, he cannot give his opinion regarding managerial efficiency because every concern has its own policy, procedures and practices.
5. **Not Preventive:** Audit is a post-mortem examination. The work of audit starts after the completion of transactions recorded in the books of accounts. Therefore, audited accounts can prevent the future activities but not the past.

4.2 NEED AND IMPORTANCE OF IT IN AUDITING

Information systems form the basis of business processes today and the controls to be made on the processes are realized with the help of technology. If processes and controls are not in place, there is a possibility of producing incomplete, incorrect, and invalid data.

The increasing importance of the use of information systems in business life has brought the subject of IT auditing to the fore. The main purpose here is to determine that the IT controls, which constitute a critical component of the organization's internal control system, are effective, sufficient, and compatible.

Evaluation of software and hardware used in institutions, information system processes, information system processes used in the production of financial data, and related internal controls has become a legal requirement by local and international regulatory institutions.IT audit is a critical issue in terms of ensuring their corporate sustainability, beyond a legal obligation for all businesses whose financial and non-financial data and information are processed and stored electronically.

What is IT Audit?

Information technology (IT) audit is an audit of the information technology systems of a business or organization, the management and operations of the systems, and the processes associated with them.

- can be made mandatory upon the request of the regulatory authority or
- can be made optionally.

Today, since the accounting recording systems of many businesses are made through computers to a high degree in the services and operations they provide, there is a need to make IT controls and examine the systems and processes while the independent audit of the business is carried out.

The using purposes of IT audit can be listed as follows:

- Evaluation of the reliability of data from IT systems that have an impact on the financial statements of businesses
- Determining the level of compliance with currently applicable laws, policies, and standards regarding IT.
- Detection and control of inefficiency as a result of unnecessary and excessive practices in the use and management of IT systems.

Why is IT Audit Important?

Many businesses spend huge amounts of money on information technologies. For example, it is known by everyone how much the technological investment of a medium-sized enterprise in an ERP system and the cost of the service received thereafter are costly. For this reason, IT systems must be reliable, but also secure, not vulnerable to potential technological attacks.

IT auditing is important. Because audit assures that IT systems are adequately protected, provide reliable information to decision-makers and information users, and are appropriately managed to achieve their intended benefits.

In businesses, most users rely on information technology without knowing how computers work and how their algorithms are. But a computer error can be repeated indefinitely and cause far more damage than human error.

IT auditing also helps mitigate risks such as data destruction, tampering, system leaks, outages, and mismanagement of IT systems.

What are the Benefits of IT Audit?

It is possible to talk about certain benefits in general for the audit activities to be carried out in the field of information technologies, but evaluating these benefits sectorally will make the situation much easier to understand. Accordingly, the following specific benefits can be expected with IT auditing in the following industries:

IT Auditing for Financial Sector

For the financial sector that is using tightly regulated IT systems, which have both an impact on financial results and a large amount of personal information, assurance can be provided on the following issues:

Regulatory Compliance: Developing the organizational structures necessary for regulatory compliance within institutions should establish the necessary processes for IT and information security governance.

Continuity of Services: Necessary investments should be made, processes should be developed and personnel should be trained in order to provide financial services uninterruptedly or within the stipulated time.

Protection of Personal Information Security and Corporate Reputation: Determination of data classes and implementation of necessary access controls, encryption controls, log management controls throughout the data lifecycle should be performed.

Protection of Financial Assets Against Attackers: With robustly designed security architectures of critical infrastructures, servers, and applications open to dangerous networks, corporate and customer financial assets should be protected.

IT Auditing for Telecom Sector

The regulatory climate is similar to the financial sector as the sensitivity of the personal data it produces and processes are quite high. Therefore, the need for confidentiality and continuity holds utmost importance for the telecom sector. For these reasons, there is a high need for assurance for this sensitive sector in the following areas:

Security of Customer Traffic Information and Compliance with Regulations: Taking the necessary precautions to protect the customer traffic and communication content, which is sectorally critical, and implementing the necessary management systems and processes.

Keeping Customer CRM Information Out of the Hands of Competitors: Preventing the leakage of customer CRM (product, package, location, profile) information from within the organization and monitoring leaks through IT systems opened to dealers, business partners, and customers for this sector where competition is at a high level.

Service Continuity: Keeping service continuity at the highest possible level by making the necessary infrastructure investments and developing processes.

Safe Adaptation of New Technologies: Making necessary risk analyzes and taking precautions against security breaches in the telecom industry, which is an early adaptor in new technologies emerging day by day.

IT Auditing for Retail Sector

Food, technology, clothing, etc. Reducing stock costs and effective use of decision support systems gain importance as a result of effective use of IT resources rather than information security for the retail sector operating in these areas. Accordingly, there is a need for assurance in the following matters primarily in this sector:

Effective IT Project Management and Ability to Deliver IT Solutions: Whether the organization has an IT management that can meet its business needs, whether the software development process is running smoothly.

Finding Adequate Decision Support Systems: Providing environments where cost and other data are collected and analyzed with the necessary tools to ensure the necessary optimizations.

Credit Card Information Security: Whether risks associated with credit card payments are avoided or addressed.

Apart from these, important hygiene rules in terms of IT organizations and processes (eg, incident management, change management, backup, logging, capacity, and performance monitoring processes, etc.) can be reviewed to provide assurance regarding the healthy performance of IT services.

To conclude, IT auditing is an important assurance tool for both foreseeing and determining IT risks, which is a quite sensitive business risk. It is a type of audit that is absolutely needed in all companies and sectors where the use of information technologies is important. In addition, IT auditing is an indispensable tool in terms of managing risks related to suppliers and business partners with which information sharing is high.

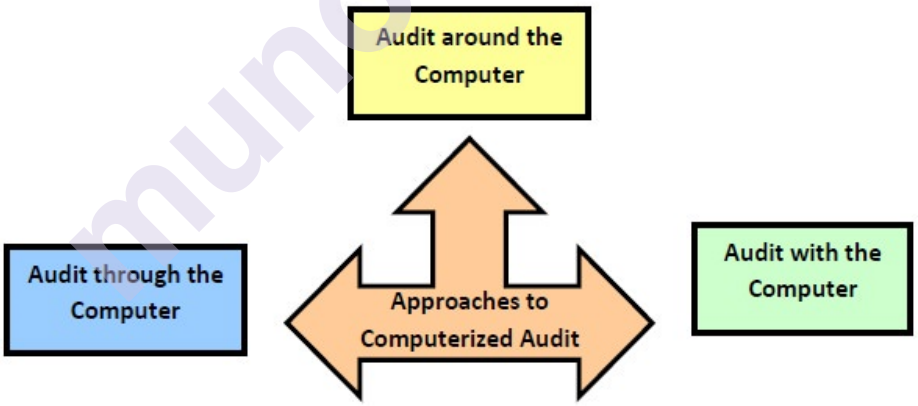
4.3 AUDITING IN IT ENVIRONMENT

Auditing in a Computer Based Environment

Introduction

Information Technology (IT) is integral to modern accounting and management information systems. It is, therefore, essential that auditors should be aware of the impact of IT on the audit of a client's financial statements. Information Technology auditing (IT auditing) began as Electronic Data Process (EDP) auditing and developed largely as a result of the rise in technology in accounting systems. The last few years have been an exciting time in the world of IT, auditing as a result of the accounting scandals and increased regulations. Regardless of the computer systems used, the audit objectives and approach will remain largely unchanged from that if the audit was being carried out in a non-computer environment.

Audit Approach in Computerised Environment



1. **Auditing Around the Computer:** It is the type of auditing done in a traditional method. The auditor summarises the input data and ignores the computer's processing but ensures the correctness of the output data generated by the computer, this approach is generally referred to as "auditing around the computer". This methodology was primarily focused on ensuring that source documentation was correctly processed and this was verified by checking the output documentation to the source documentation

2. **Auditing Through the Computer:** Due to the "real time" computer environments, there may only be a limited amount of source documentation or paperwork hence the auditor may employ an

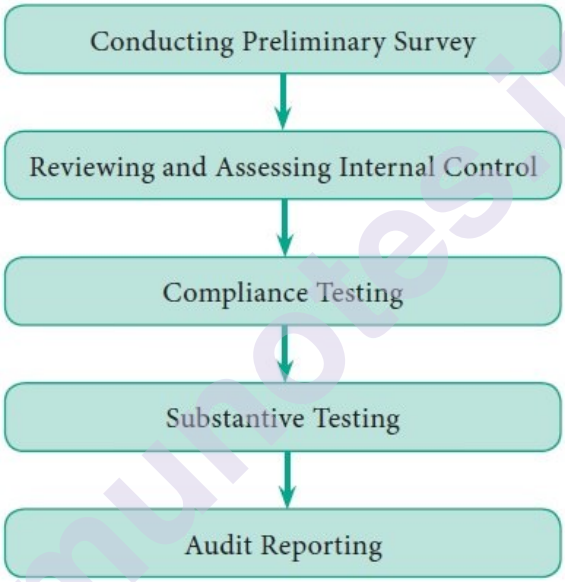
approach known as "auditing through the computer". In this approach, the reliability and accuracy of the results are analysed through the computer. This involves the auditor to perform tests on the information technology controls to evaluate their effectiveness like Compliance test, Test Packs, Reprocessing.

3. **Auditing with the Computer:** The utilization of computer by the auditor for some audit work and he uses some general software for the purpose of calculating depreciation, printing letters, and duplicate checking and files comparison.

The computer is not used for all the audit work and it is done manually.

Audit Process for Computerized Accounting System

The audit process for a computerized accounting system involves the following five major steps:



1. **Conducting Preliminary Survey:** This is a preliminary work to plan how the audit should be conducted. The auditors gather information about the computerized accounting system that is relevant to the audit plan. This includes an understanding of how the computerized accounting functions are organized, identification of the computer software used, understanding accounting application processed by computer and identification applicable controls.

2. **Reviewing and Assessing Internal Controls:** There are two types of controls namely general controls and application controls.

   General Controls: General controls are those that cover the organization, management and processing within the computer environment. They should be tested prior to application controls, because if they are found to be ineffective, the auditor will not be able to rely on application controls. General controls include proper segregation of duties, file backup, use of labels, access control, etc.

Application Controls: Application controls relate to specific tasks performed by the system. They include input controls, processing controls, and output controls. They should provide reasonable assurance that the initiating, recording, processing and reporting of data are properly performed.

3. **Compliance Testing:** Compliance testing is performed to determine whether the controls actually exist and function as intended. This can be performed by comparing the results to predetermined results or by processing dummy transactions.

4. **Substantive Testing:** This is performed to determine whether the data is real. Substantive tests are tests of transactions and balances and analytical procedures designed to substantiate the assertions. Auditors must obtain and evaluate evidence concerning management's assertions about the financial statements. The auditor must obtain sufficient competent evidential matter to provide a basis for an opinion regarding the financial statements under audit. If sufficient competent evidence cannot be obtained then an opinion cannot be issued.

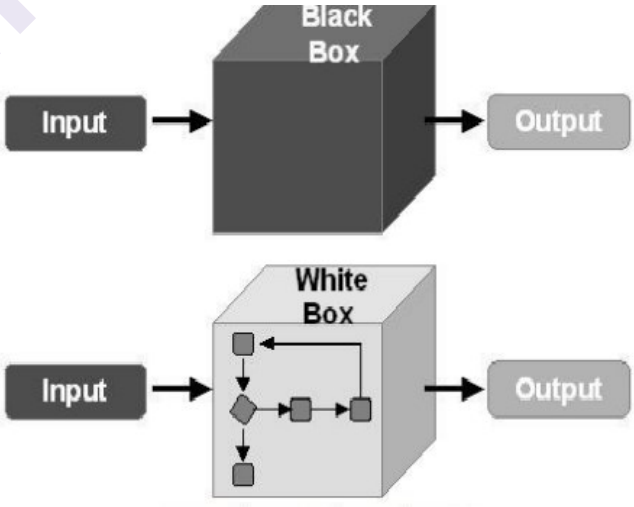
5. **Audit Reporting:** The audit report will contain detailed information on various aspects of their findings in the process of audit in a computerized environment.

AUDIT METHODOLOGIES OR APPROACHES IN A COMPUTERIZED ENVIRONMENT:

Based on knowledge and expertise of auditors in handling computerized data, the audit approaches in a CIS Environment could be either:

1. Black box approach i.e. Auditing around the computer

2. White box approach i.e. Auditing through the computer.



Black Box Penetration Test

A **black box security audit** is carried out in the closest conditions to an external attack performed by a remote unknown attacker. This mean that no (or almost no) information is provided to the pentesters before starting the tests.

The black box expression refers to the analysis of the system/the target, which is conducted without knowing its internal working.

Pentesters only know the name of the target organisation and often an IP address or a URL. The attack surface is therefore broad. Time is first spent exploring the various elements included in the target, before prioritising the attacks according to the elements discovered during this recon phase.

Black box penetration testing enables a freedom of choice of targets (when the target includes several assets) in order to maximise the impact of discovered vulnerabilities, as in the case of a real malicious attack. This audit requires very little preparation from you as a contractor.

One of the advantages of this approach is that pentesters bring a fresh look at the target and thus a new assessment of potential entry points from an attacker's point of view. This avoids, for example, focusing tests only on what is perceived as important to secure, while the risks of other elements may be underestimated.

It is possible to conduct a **black box pentest** without notifying the teams in charge of detecting attacks, in order to see the company's ability to detect an attack and react appropriately.

White Box Penetration Test

Contrary to the black box, a **white box** (sometimes crystal box) **security audit** means that the maximum amount of information is shared with the pentesters before the audit. The information necessary for the audit is provided in complete transparency. The working of the target is then known and made visible, hence the term white box.

The information can be architecture documents, administrator access to servers, access to source code…

The **white box security audit** is not a pentest in itself, since auditors do not place themselves from the point of view of an attacker. It is a more thorough security analysis than a penetration test, providing a better understanding of where security problems originate. It also uncovers vulnerabilities that are not visible during a pentest, but which may cause a security risk even so.

Grey Box Penetration Test

During a **grey box** pentesters start having already information about their target. This may consist in providing information on the working of the audit target, providing user accounts on a platform with restricted access,

providing access to a target that is not publicly accessible, etc. This allows more in-depth testing, with a better understanding of the context.

For a **grey box security audit**, the attack surface is a defined scope. This enables focus tests on elements that have already been identified: the most high-risk areas, sensitive elements, elements accessible internally, etc. It is the audit that enables attacks to be simulated from customers, partners, visitors and employees' situation.

One of the advantages of this approach is that it is possible to set a precise scope for the tests, according to your priorities, for example to test only the latest elements put in production or particularly sensitive functionalities. In short and simplified,

- **Black box:** penetration tests from the point of view of an external attacker, minimum level of information made available to pentesters
- **Grey box:** standard user's point of view, intermediate level of information shared with pentesters
- **White box:** an administrator's point of view, maximum level of information provided

The vulnerabilities identified during a black box and grey box therefore represent direct and immediate risks for the organisation, while a white box audit enables further security analysis.

It is totally possible to choose different approaches depending on the targets and the company's security maturity on different scopes.

4.4 SUMMARY

Although every audit process is unique, the audit process is similar for most engagements and normally consists of four stages: Planning (sometimes called Survey or Preliminary Review), Fieldwork, Audit Report and Follow-up Review. Client involvement is critical at each stage of the audit process. The auditor's report includes: the audit opinion on the annual financial report. any significant non-compliance in relation to the financial report or other financial management practices. any material matters that indicate significant adverse trends in the financial position of the entity.

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5

AUDING IN IT ENVIRONMENT CAATS & CLOUD COMPUTING

Unit Structure :

5.0 LEARNING OBJECTIVES

- The learning objectives of the CAAT module are:
- Understand how to use office automation software for performing various tasks as relevant to services provided by chartered accountant in areas of accounting, assurance and compliance.
- How to use CAAT/SQL queries for data analysis as required.
- How to review controls implemented at various levels/layers such as: Parameters, user creation, granting of access rights, input, processing and output controls in enterprise applications.

5.1 INTRODUCTION

Auditors deal with information in myriad ways encompassing the areas of accounting, assurance, consulting and compliance and most of this information is now available in electronic form. This is true not only in case of large and medium enterprises but even in small enterprises. In case there are enterprises who have still not adapted the digital way, then it is an

opportunity for Auditors to help such enterprises to ride the digital wave. Hence, it has become critical for Auditors to understand and use information technology as relevant for the services we provide. It is rightly said: "one cannot audit data which is flying in bits and bytes by using the ancient method of riding on a horse back". We are living in a knowledge era where the skill sets are keys to harnessing the power of technology to be effective as knowledge workers. Computer Assisted Audit Techniques (CAATs) refers to using technology for increasing the effectiveness and efficiency of auditing. CAATs enable auditors to do more with less and add value through the assurance process which is more robust and comprehensive. This chapter provides an overview of the process, approach and techniques which could be used across various technology platforms and in diverse enterprises.

5.2 THE ALL-ENCOMPASSING ELECTRONIC DATA

A great blessing in ancient times was: "May you live in exciting times". Indeed, we are living in exciting times without even being aware of it. We are experiencing how technology innovations are making our life and living simpler by bridging global boundaries and bringing global information on our finger tips. For enterprises as well as professionals, the question is no longer what technology can do for us but what we can do with technology. The question "do I need to use technology" is no longer relevant instead the relevant decision is about "how do I use technology to remain relevant". Introduction to CAAT INFORMATION TECHNOLOGY 175 Information technology is all pervasive and more so as the government and regulatory agencies also are using technology platform to provide services to citizens and compelling information to be fi led in electronic form. The government at all levels has drawn up ambitious plans to implement e-Governance initiatives to improve speed, access and transparency of services. The Information Technology (IT) Act 2000 with IT Amendment Act 2008 and IT rules 2011 provide the regulatory framework and mechanism for recognizing electronic records and electronic transactions thereby facilitating ecommerce and also identifying cybercrimes and providing penalties and compensation for them. Hence, we can expect IT usage to only keep growing in the near future impacting all areas of life more so in our work as professionals.

5.3 AUDITORS AND CAATS

As auditors, we come across computers and communication technology as the most common denominator among our clients, both large and small. Further, we use computers and communication technology for providing services to our clients. In today's complex and rapidly changing technology environment, it is important to master the right techniques which could be used across enterprises and across various technology platforms. Typical of a IT environment are the speed of processing, large capacity of storage, lack of the paper based trails, the radically different way of information processing, the ease of information access, internal controls being imbedded and the ever-present risk of failure of IT and loss of data. All these factors

make it imperative for auditors to harness power of technology to audit technology environment by taking into consideration the risks, benefi ts and advantages. CAATs empower Auditors with the key survival techniques which effective used in any IT environment. CAATs are not specialist tools designed for use by specialist IT auditors but these are common techniques which can be easily mastered to audit in a computerized environment for statutory audit, tax audit and internal audit as also for providing consulting services.

5.4 AUDITORS AND CAATS

CAATs are tools for drawing inferences and gathering relevant and reliable evidence as per requirements of the assignment. CAATs provide direct access to electronic information and empower auditors not only to perform their existing audits more efficiently and effectively but also facilitate them in knowing how to create and execute new type of IT related audit assignments. CAATs provide a mechanism to gain access and to analyse data as per audit objective and report the audit findings with greater emphasis on the reliability of electronic information maintained in the computer system. There is higher reliability on the audit process as the source of the information used provides and greater assurance on audit findings and opinion. CAATs are available in specific c general audit software designed for this purpose but the techniques of CAATs can be applied even by using commonly used software such as MS Excel and by using query/reporting features of commonly used application software. CAATs can be used to perform routine functions or activities which can be done using computers, allowing the auditors to spend more time on analysis and reporting. A good understanding of CAATs and know where and when to apply them is the key to success. ICAI has published a guidance note on CAAT and publication titled: “Data Analysis for Auditors” which may be referred for more details.

5.5 NEED FOR CAATS

In a diverse digital world of clients’ enterprises, the greatest challenges for an Auditor is to use technology to access, analyse and audit this maze of electronic data. CAATs enable auditors to move from the era of ticks of using pencil or pen to the era of clicks by using a mouse. CAATs will help Computer Assisted Audit Techniques 176 INFORMATION TECHNOLOGY auditors to change focus from time-consuming manual audit procedures to intelligent analysis of data so as to provide better assurance to clients and also mange audit risks.

Some of the key reasons for using CAATs are:

1. Absence of input documents or lack of a visible paper trail may require the use of CAATs in the application of compliance and substantive procedures.

2. Need for obtaining sufficient, relevant and useful evidence from the IT applications or database as per audit objectives.

3. Ensuring audit findings and conclusions are supported by appropriate analysis and interpretation of the evidence

4. Need to access information from systems having different hardware and software environments, different data structure, record formats, processing functions in a commonly usable format.

5. Need to increased audit quality and comply with auditing standards.

6. Need to identify materiality, risk and significance in an IT environment.

7. Improving the efficiency and effectiveness of the audit process.

8. Ensuring better audit planning and management of audit resources.

5.6 OBTAINING AUDIT DATA

In most cases where CAATs are used, it becomes necessary to obtain copy of data in their original format for independent analysis. The data has to be obtained in commonly accepted format. It is important to understand the format in which the data is stored in the application which is being audited. If the data is a native format which is not readable by audit software, then it is necessary to use the reporting feature of application software and export this data to commonly recognizable format of audit software. For example, auditor may not be aware of the data structure/tables of a software developed through a vendor by the client. In such case, auditor may have to study the reporting features and use the export feature to get the data in the required format. It is very important to educate the client about the need to obtain copy of the data as required for audit. Based on the audit scope and relevant audit environment, auditor may have to finalize the required approach for getting the data for audit. This may include installing audit software on client system or using the application software for audit as feasible.

5.7 KEY STEPS FOR OBTAINING DATA

1. Discuss with client about the requirement of raw data for audit and issue a request letter for getting the requested data in specified form as per the audit objectives.

2. Discuss with the IT personnel responsible for maintain data/application software and obtain copies of record layout and definitions of all fi elds and ensure that you have an overall understanding of the data. The record layout should describe each fi eld and provide information about the starting and ending positions and the data type (numeric, alphanumeric, character, etc.).

3. Print sample list of the first 100 records in the data fi le and compare this to a printout of the obtained data to confirm they are correct.

4. Verify data for completeness and accuracy by checking the fi eld types and formats, such as identifying all records with an invalid date in a date field.

5. Obtain control totals of all the key data and compare with totals from the raw data to ensure all records have been properly obtained. This can be performed by importing the data in audit software and reviewing the statistics of all the key fi elds.

5.8 KEY CAPABILITIES OF CAATS

CAATs refer to using computer for auditing data as per audit objectives. This requires understanding of the IT environment and most critically the core applications and the relevant database and database structure. CAATs could be used by using the relevant functionalities available in general audit software, spreadsheet software or the business application software.

However, broadly the key capabilities of CAATs could be categorized as follows:

1. File access:

This refers to the capability of reading of different record formats and fi le structures. These include common formats of data such as database, text formats, excel fi les. This is generally done using the import/ODBC function.

2. File reorganization:

This refers to the features of indexing, sorting, merging, linking with other identified fi les. These functions provide auditor with an instant view of the data from different perspectives.

3. Data selection:

This involves using of global filter conditions to select required data based on specific ed criteria.

4. Statistical functions:

This refers to the features of sampling, stratification and frequency analysis. These functions enable intelligent analysis of data.

5. Arithmetical functions:

This refers to the functions involving use of arithmetic operators. These functions enable performing re-computations and re-performance of results. Precautions in using CAATs CAATs have distinct advantages for Auditors and enable them to perform various types of tests. However, it is important to ensure that adequate precautions are in taken in using them.

Some of the important precautions to be taken by Auditors are:

1. Identify correctly data to be audited
2. Collect the relevant and correct data fi les

3. Identify all the important fi elds that need to be accessed from the system
4. State in advance the format the data can be downloaded and defi ne the fi elds correctly
5. Ensure the data represent the audit universe correctly and completely.
6. Ensure the data analysis is relevant and complete.
7. Perform substantive testing as required.
8. Information provided by CAATs could be only indicators of problems as relevant and perform detailed testing as required.

5.9 STEP BY STEP METHODOLOGY FOR USING CAATS

CAATs are very critical tools for Auditors. Hence, it is important to formulate appropriate strategies to ensure their effective use. Some of the key strategies for using CAATs are: 1. Identify the scope and objectives of the audit. Based on this, auditor can decided about the need and the extent to which CAAT could be used. 2. Identify the critical data which is being audited as per audit scope and objectives. 3. Identify the sources of data from the enterprise information system/application software. These could be relating to general ledger, inventory, payroll, sundry debtors, sundry creditors. 4. Identify the relevant personnel responsible for the data and information system. These personnel could be from the IT department, vendors, managers, etc. 5. Obtain and review documents relating to data/information systems. This should provide information about data types/data structures and data fl ow of the system. 6. Understand the software by having a walk-through right from user creation, grant of user access, configuration settings, data entry, query and reporting features. 7. Decide what techniques of CAATs could be used as relevant to the environment by using relevant CAAT software as required. 8. Prepare a detailed plan for analysing the data. This includes all the above steps. 9. Perform relevant tests on audit data as required and prepare audit fi ndings which will be used for forming audit report/opinion as required.

5.10 EXAMPLES OF TESTS PERFORMED USING CAATS

CAATs can be used for compliance or substantive tests. As per the audit plan, compliance tests are performed fi rst as per risk assessment and based on the results of the compliance tests; detailed compliance tests could be performed. Some examples of tests which can be performed using CAATs are given below:

1. **Identify exceptions:**

   Identify exceptional transactions based on set criteria. For example, cash transactions above Rs. 20,000.

2. **Analysis of Controls:**

   Identify whether controls as set have been working as prescribed. For example, transactions are entered as per authorised limits for specified users.

3. **Identify errors:**

   Identify data, which is inconsistent or erroneous. For e.g.: account number which is not numeric.

4. **Statistical sampling:**

   Perform various types of statistical analysis to identify samples as required.

5. **Detect frauds:**

   Identify potential areas of fraud. For example, transactions entered on weekdays or purchases from vendors who are not approved.

6. **Verify calculations:**

   Re-perform various computations in audit software to confirm the results from application software confirm with the audit software. For e.g.: TDS rate applied as per criteria.

7. **Existence of records:**

   Identify fi elds, which have null values. For example: invoices which do not have vendor name.

8. **Data completeness:**

   Identify whether all fi elds have valid data. For example: null values in any key fi eld such as date, invoice number or value or name.

9. **Data consistency:**

   Identify data, which are not consistent with the regular format. For example: invoices which are not in the required sequence.

10. **Duplicate payments:**

    Establish relationship between two or more tables as required. For example duplicate payment for same invoice.

11. **Inventory obsolescence:**

    Sort inventory based on data of purchase or categories as per specified aging criteria or period and identify inventory which has become obsolete.

12. **Accounts exceeding authorized limit:** Identify data beyond specified limit. For example, transactions entered by user beyond their authorized limit or payment to vendor beyond amount due or overdraft allowed beyond limit.

5.11 ANALYTICAL REVIEW PROCEDURES

The various standards on auditing highlight need for acquiring the required skill-sets to audit in an IT environment and using relevant techniques. Many of the requirements of the auditing standards can be complied by adapting them for use in an IT environment as required. For example: Standard on Auditing (SA) 520Analytical Procedures states: A1. Analytical procedures include the consideration of comparisons of the entity's financial information with, for example: Comparable information for prior periods. λ Anticipated results of the entity, such as budgets or forecasts, or expectations of the auditor, such as an estimation of depreciation. Similar industry information, such as a comparison of the entity's ratio of sales to accounts receivable with industry averages or with other entities of comparable size in the same industry. A2. Analytical procedures also include consideration of relationships, for example: Among elements of financial information that would be expected to conform to a predictable pattern based on the entity's experience, such as gross margin percentages. Most of the analytical procedures can be performed in an IT environment using CAATs which makes the audit process much more effective and efficient.

5.12 CLOUD COMPUTING

What is cloud computing?

Cloud computing is a general term for anything that involves delivering hosted services over the internet. These services are divided into three main categories or types of cloud computing: infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS).

A cloud can be private or public. A public cloud sells services to anyone on the internet. A private cloud is a proprietary network or a data center that supplies hosted services to a limited number of people, with certain access and permissions settings. Private or public, the goal of cloud computing is to provide easy, scalable access to computing resources and IT services.

Cloud infrastructure involves the hardware and software components required for proper implementation of a cloud computing model. Cloud computing can also be thought of as utility computing or on-demand computing.

The name *cloud computing* was inspired by the cloud symbol that's often used to represent the internet in flowcharts and diagrams.

How does cloud computing work?

Cloud computing works by enabling client devices to access data and cloud applications over the internet from remote physical servers, databases and computers.

An internet network connection links the front end, which includes the accessing client device, browser, network and cloud software applications, with the back end, which consists of databases, servers and computers. The back end functions as a repository, storing data that is accessed by the front end.

Communications between the front and back ends are managed by a central server. The central server relies on protocols to facilitate the exchange of data. The central server uses both software and middleware to manage connectivity between different client devices and cloud servers. Typically, there is a dedicated server for each individual application or workload.

Cloud computing relies heavily on virtualization and automation technologies. Virtualization enables the easy abstraction and provisioning of services and underlying cloud systems into logical entities that users can request and utilize. Automation and accompanying orchestration capabilities provide users with a high degree of self-service to provision resources, connect services and deploy workloads without direct intervention from the cloud provider's IT staff.

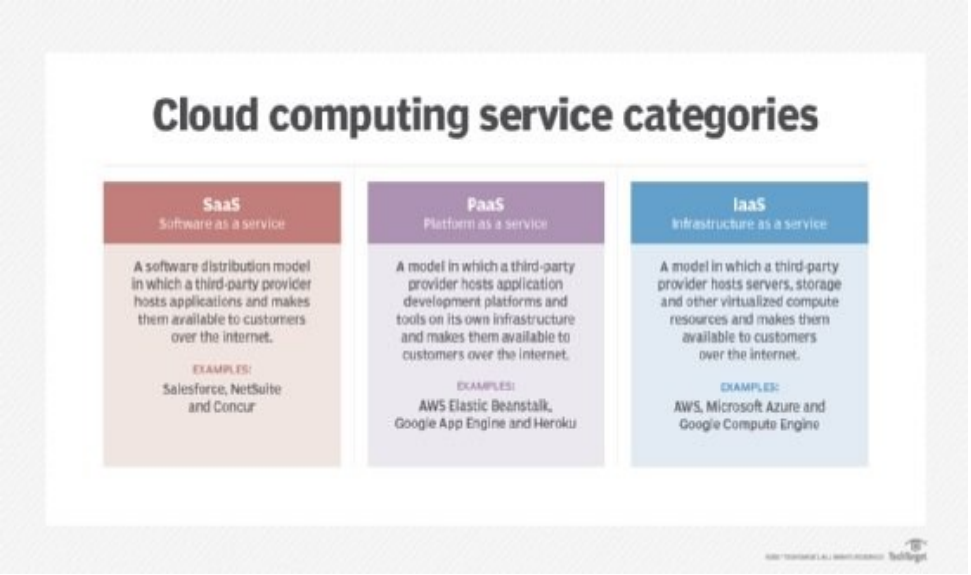
What are the different types of cloud computing services?

Cloud computing can be separated into three general service delivery categories or forms of cloud computing:

1. **IaaS.** IaaS providers, such as Amazon Web Services (AWS), supply a virtual server instance and storage, as well as application programming interfaces (APIs) that let users migrate workloads to a virtual machine (VM). Users have an allocated storage capacity and can start, stop, access and configure the VM and storage as desired. IaaS providers offer small, medium, large, extra-large, and memory- or compute-optimized instances, in addition to enabling customization of instances, for various workload needs. The IaaS cloud model is closest to a remote data center for business users.

2. **PaaS.** In the PaaS model, cloud providers host development tools on their infrastructures. Users access these tools over the internet using APIs, web portals or gateway software. PaaS is used for general software development, and many PaaS providers host the software after it's developed. Common PaaS products include Salesforce's Lightning Platform, AWS Elastic Beanstalk and Google App Engine.

3. **SaaS.** SaaS is a distribution model that delivers software applications over the internet; these applications are often called *web services*. Users can access SaaS applications and services from any location using a computer or mobile device that has internet access. In the SaaS model, users gain access to application software and databases. One common example of a SaaS application is Microsoft 365 for productivity and email services.



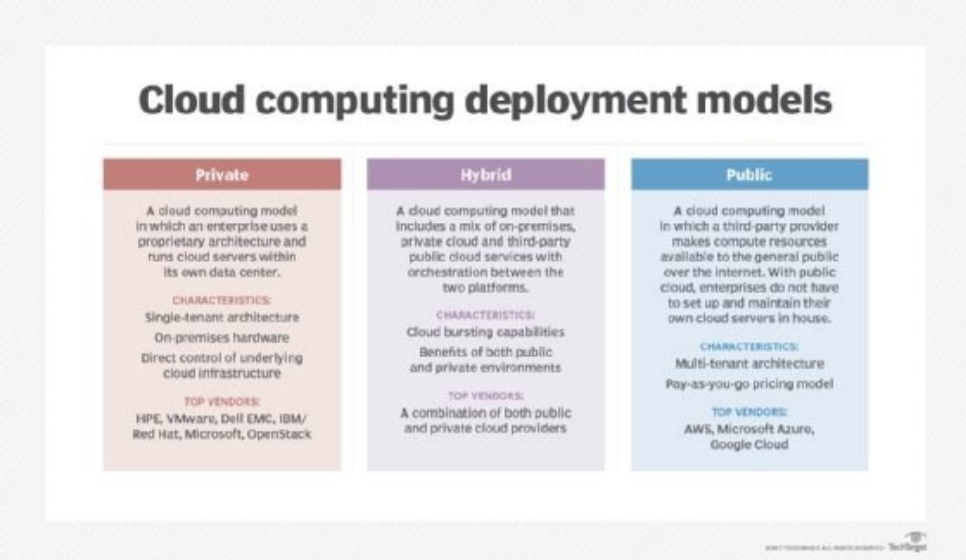
Three cloud service categories

Cloud computing deployment models

Private cloud services are delivered from a business's data center to internal users. With a private cloud, an organization builds and maintains its own underlying cloud infrastructure. This model offers the versatility and convenience of the cloud, while preserving the management, control and security common to local data centers. Internal users might or might not be billed for services through IT chargeback. Common private cloud technologies and vendors include VMware and OpenStack.

In the public cloud model, a third-party cloud service provider (CSP) delivers the cloud service over the internet. Public cloud services are sold on demand, typically by the minute or hour, though long-term commitments are available for many services. Customers only pay for the central processing unit cycles, storage or bandwidth they consume. Leading public CSPs include AWS, Microsoft Azure, IBM and Google Cloud Platform (GCP), as well as IBM, Oracle and Tencent.

A hybrid cloud is a combination of public cloud services and an on-premises private cloud, with orchestration and automation between the two. Companies can run mission-critical workloads or sensitive applications on the private cloud and use the public cloud to handle workload bursts or spikes in demand. The goal of a hybrid cloud is to create a unified, automated, scalable environment that takes advantage of all that a public cloud infrastructure can provide, while still maintaining control over mission-critical data.



The three main cloud deployment models

In addition, organizations are increasingly embracing a multi-cloud model, or the use of multiple IaaS providers. This enables applications to migrate between different cloud providers or to even operate concurrently across two or more cloud providers.

Organizations adopt multi-cloud for various reasons. For example, they could do so to minimize the risk of a cloud service outage or to take advantage of more competitive pricing from a particular provider. Multi-cloud implementation and application development can be a challenge because of the differences between cloud providers' services and APIs.

Multi-cloud deployments should become easier, however, as providers' services and APIs converge and become more standardized through industry initiatives such as the Open Cloud Computing Interface.

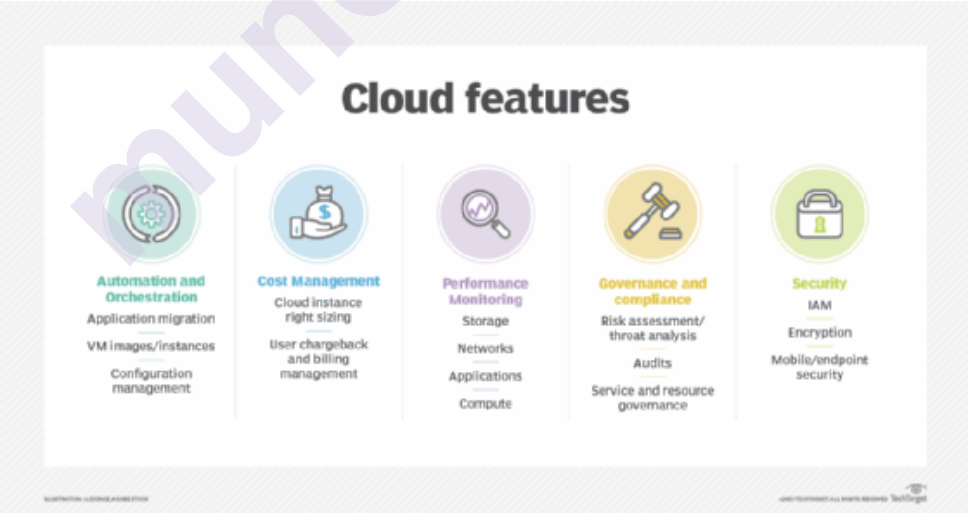
A community cloud, which is shared by several organizations, supports a particular community that shares the same concerns -- e.g., the same mission, policy, security requirements and compliance considerations. A community cloud is either managed by these organizations or a third-party vendor and can be on or off premises.

Characteristics and advantages of cloud computing

Cloud computing has been around for several decades now, and today's cloud computing infrastructure demonstrates an array of characteristics that have brought meaningful benefits for businesses of all sizes. Some of the main characteristics of cloud computing are the following:

- **Self-service provisioning.** End users can spin up compute resources for almost any type of workload on demand. An end user can provision computing capabilities, such as server time and network storage, eliminating the traditional need for IT administrators to provision and manage compute resources.

- **Elasticity.** Companies can freely scale up as computing needs increase and scale down again as demands decrease. This eliminates the need for massive investments in local infrastructure, which might or might not remain active.
- **Pay per use.** Compute resources are measured at a granular level, enabling users to pay only for the resources and workloads they use.
- **Workload resilience.** CSPs often implement redundant resources to ensure resilient storage and to keep users' important workloads running -- often across multiple global regions.
- **Migration flexibility.** Organizations can move certain workloads to or from the cloud -- or to different cloud platforms -- as desired or automatically for better cost savings or to use new services as they emerge.
- **Broad network access.** A user can access cloud data or upload data to the cloud from anywhere with an internet connection using any device.
- **Multi-tenancy and resource pooling.** Multi-tenancy lets numerous customers share the same physical infrastructures or the same applications yet still retain privacy and security over their own data. With resource pooling, cloud providers service numerous customers from the same physical resources. The resource pools of the cloud providers should be large and flexible enough so they can service the requirements of multiple customers.



An overview of cloud features and characteristics

These characteristics support a variety of important benefits for modern business, including the following:

- **Cost management.** Using cloud infrastructure can reduce capital costs, as organizations don't have to spend massive amounts of money buying and maintaining equipment. This reduces their capital expenditure costs -- as they don't have to invest in hardware, facilities,

utilities or building large data centers to accommodate their growing businesses. Additionally, companies don't need large IT teams to handle cloud data center operations because they can rely on the expertise of their cloud providers' teams. Cloud computing also cuts costs related to downtime. Since downtime rarely happens in cloud computing, companies don't have to spend time and money to fix any issues that might be related to downtime.

- **Data and workload mobility.** Storing information in the cloud means that users can access it from anywhere with any device with just an internet connection. That means users don't have to carry around USB drives, an external hard drive or multiple CDs to access their data. Users can access corporate data via smartphones and other mobile devices, enabling remote employees to stay up to date with co-workers and customers. End users can easily process, store, retrieve and recover resources in the cloud. In addition, cloud vendors provide all the upgrades and updates automatically, saving time and effort.
- **Business continuity and disaster recovery (BCDR).** All organizations worry about data loss. Storing data in the cloud guarantees that users can always access their data even if their devices, e.g., laptops or smartphones, are inoperable. With cloud-based services, organizations can quickly recover their data in the event of emergencies, such as natural disasters or power outages. This benefits BCDR and helps ensure that workloads and data are available even if the business suffers damage or disruption.

What are the disadvantages of cloud computing?

Despite the clear upsides to relying on cloud services, cloud computing carries its own challenges for IT professionals:

- **Cloud security.** Security is often considered the greatest challenge facing cloud computing. When relying on the cloud, organizations risk data breaches, hacking of APIs and interfaces, compromised credentials and authentication issues. Furthermore, there is a lack of transparency regarding how and where sensitive information entrusted to the cloud provider is handled. Security demands careful attention to cloud configurations and business policy and practice.
- **Cost unpredictability.** Pay-as-you-go subscription plans for cloud use, along with scaling resources to accommodate fluctuating workload demands, can make it tough to define and predict final costs. Cloud costs are also frequently interdependent, with one cloud service often utilizing one or more other cloud services -- all of which appear in the recurring monthly bill. This can create additional unplanned cloud costs.
- **Lack of capability and expertise.** With cloud-supporting technologies rapidly advancing, organizations are struggling to keep up with the growing demand for tools and employees with the proper skill sets and knowledge needed to architect, deploy, and manage workloads and data in a cloud.

- **IT governance.** The emphasis on do-it-yourself capability in cloud computing can make IT governance difficult, as there is no control over provisioning, deprovisioning and management of infrastructure operations. This can make it challenging to properly manage risks and security, IT compliance and data quality.

- **Compliance with industry laws.** When transferring data from on-premises local storage into cloud storage, it can be difficult to manage compliance with industry regulations through a third party. It's important to know where data and workloads are actually hosted in order to maintain regulatory compliance and proper business governance.

- **Management of multiple clouds.** Every cloud is different, so multi-cloud deployments can disjoint efforts to address more general cloud computing challenges.

- **Cloud performance.** Performance -- such as latency -- is largely beyond the control of the organization contracting cloud services with a provider. Network and provider outages can interfere with productivity and disrupt business processes if organizations are not prepared with contingency plans.

- **Building a private cloud.** Architecting, building and managing private clouds -- whether for its own purpose or for a hybrid cloud goal -- can be a daunting task for IT departments and staff.

- **Cloud migration.** The process of moving applications and other data to the cloud often causes complications. Migration projects frequently take longer than anticipated and go over budget. The issue of workload and data repatriation -- moving from the cloud back to a local data center -- is often overlooked until unforeseen cost or performance problems arise.

- **Vendor lock-in.** Often, switching between cloud providers can cause significant issues. This includes technical incompatibilities, legal and regulatory limitations and substantial costs incurred from sizable data migrations.

Cloud computing examples and use cases

Cloud computing has evolved and diversified into a wide array of offerings and capabilities designed to suit almost any conceivable business need. Examples of cloud computing capabilities and diversity include the following:

- **Google Docs, Microsoft 365.** Users can access Google Docs and Microsoft 365 through the internet. Users can be more productive because they can access work presentations and spreadsheets stored in the cloud at anytime from anywhere on any device.

- **Email, Calendar, Skype, WhatsApp.** Emails, calendars, Skype and WhatsApp take advantage of the cloud's ability to provide users with

access to data remotely so they can access their personal data on any device, whenever and wherever they want.

- **Zoom.** Zoom is a cloud-based software platform for video and audio conferencing that records meetings and saves them to the cloud, enabling users to access them anywhere and at any time. Another common communication and collaboration platform is Microsoft Teams.
- **AWS Lambda.** Lambda enables developers to run code for applications or back-end services without having to provision or manage servers. The pay-as-you-go model constantly scales with an organization to accommodate real-time changes in data usage and data storage. Other major cloud providers also support serverless computing capabilities, such as Google Cloud Functions and Azure Functions.

So, how is the cloud actually used? The myriad services and capabilities found in modern public clouds have been applied across countless use cases, such as the following:

- **Testing and development.** Ready-made, tailored environments can expedite timelines and milestones.
- **Production workload hosting.** Organizations are using the public cloud to host live production workloads. This requires careful design and architecture of cloud resources and services needed to create an adequate operational environment for the workload and its required level of resilience.
- **Big data analytics.** Remote data centers through cloud storage are flexible and scalable and can provide valuable data-driven insights. Major cloud providers offer services tailored to big data projects, such as Amazon EMR and Google Cloud Dataproc.
- **IaaS.** IaaS enables companies to host IT infrastructures and access compute, storage and network capabilities in a scalable manner. Pay-as-you-go subscription models can help companies save on upfront IT costs.
- **PaaS.** PaaS can help companies develop, run and manage applications in an easier and more flexible way, at a lower cost than maintaining a platform on premises. PaaS services can also increase development speed for applications and enables higher-level programming.
- **Hybrid cloud.** Organizations have the option to use the appropriate cloud -- private or public -- for different workloads and applications to optimize cost and efficiency according to the circumstance.
- **Multi-cloud.** Using multiple different cloud services from separate cloud providers can help subscribers find the best cloud service fit for diverse workloads with specific requirements.

- **Storage.** Large amounts of data can be stored remotely and accessed easily. Clients only have to pay for storage that they actually use.
- **DR.** Cloud offers faster recovery than traditional on-premises DR. Furthermore, it is offered at lower costs.
- **Data backup.** Cloud backup solutions are generally easier to use. Users do not have to worry about availability and capacity, and the cloud provider manages data security.

Cloud computing vs. traditional web hosting

Given the many different services and capabilities of the public cloud, there has been some confusion between cloud computing and major uses, such as web hosting. While the public cloud is often used for web hosting, the two are quite different. A cloud service has three distinct characteristics that differentiate it from traditional web hosting:

1. Users can access large amounts of computing power on demand. It is typically sold by the minute or the hour.
2. It is elastic -- users can have as much or as little of a service as they want at any given time.
3. The service is fully managed by the provider -- the consumer needs nothing but a personal computer and internet access. Significant innovations in virtualization and distributed computing, as well as improved access to high-speed internet, have accelerated interest in cloud computing.

5.13 SUMMARY

CAATs enable auditors to use computers as a tool to audit electronic data. CAATs provide auditors access to data in the medium in which it is stored, eliminating the boundaries of how the data can be audited. As auditors start using CAATs, they will be in a better position to have a considerable impact on their audit and auditee as more time is spent on analysis and less time on routine verification. It is important to understand the client IT environment and chart out which techniques of CAAT could be used. Initially, time needs to be invested in this Endeavour but once the audit plan is prepared based on the IT environment as per audit scope, re-use becomes easier. However, the audit plan and tests need to be updated based on changes in the IT environment as relevant. Using CAATs provides greater assurance of audit process to the auditor and also to the auditee. The key to using CAAT is recognizing the need, learning how to use CAATs and using them in practical situations.

5.14 MODEL QUESTIONS

4. What is IT Audit? Explain advantages of IT Audit?

2. Explain the scope of Audit in an IT Environment.

3. What are the Internal Controls in IT Environment?

4. Short note on CAAT, along with its advantages and disadvantages.

5. Short note on Effects of Computers on Audit.

6. Explain approach to Auditing in CIS Environment.

7. Explain White box and Blackbox Approach – its meaning and uses.

8. Short note on Cloud Computing

5.15 MCQ

1. Ms. Sarika owns an Apple Macintosh laptop. It has Mac Operating System in it. Now she wants to learn Tally ERP 9. So she is unable to use Tally on it. Kindly tell which of the below service will she need to use to install Virtual Machine of Windows, so that she can learn Tally ERP 9 on her Mac.

   a. SaaS

   b. PaaS

   c. NaaS

   d. **IaaS**

2. Mr. Amit is an Android app developer. He wants to upload his app on Google Play Store. He has already registered his Gmail account as a developer account and also paid the one-time fees of USD 25. Now he can upload as many apps he can develop on the Google Play Store. This is an example of _____

   a. SaaS

   b. **PaaS**

   c. NaaS

   d. IaaS

3. Statement A: The role of IT auditor is very challenging now-a-days

   Statement B: IT Audit and IS Audit are synonymous

   a. Both statements are true

   b. Both statements are false

   c. Statement A is true and B is false

   d. Statement B is true and A is false

4. Mr. Jayant, an auditor of Sharp Ltd, uses a free version of testing tool. But this demo version tool does not contain all the vulnerability database entries. If he would have used a full version of the testing tool, the error or fraud could have been detected. Which type of risk Mr. Jayant faces?

   a. Inherent risk

   b. Control risk

   c. Audit risk

   d. **Detection risk**

5. CAAT stands for _____

   a. Classical Accounting and Auditing Techniques

   b. Computerized Accounting and Auditing Techniques

   c. **Computer Assisted Auditing Techniques**

   d. Constructive Accounting and Auditing Techniques

6. In which audit approach, the auditor will compare the inputs with the outputs and if it matches, the auditor will assume that the processing of transaction must have been correct?

   a. White Box approach

   b. Grey Box approach

   c. **Black Box approach**

   d. Red Box approach

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