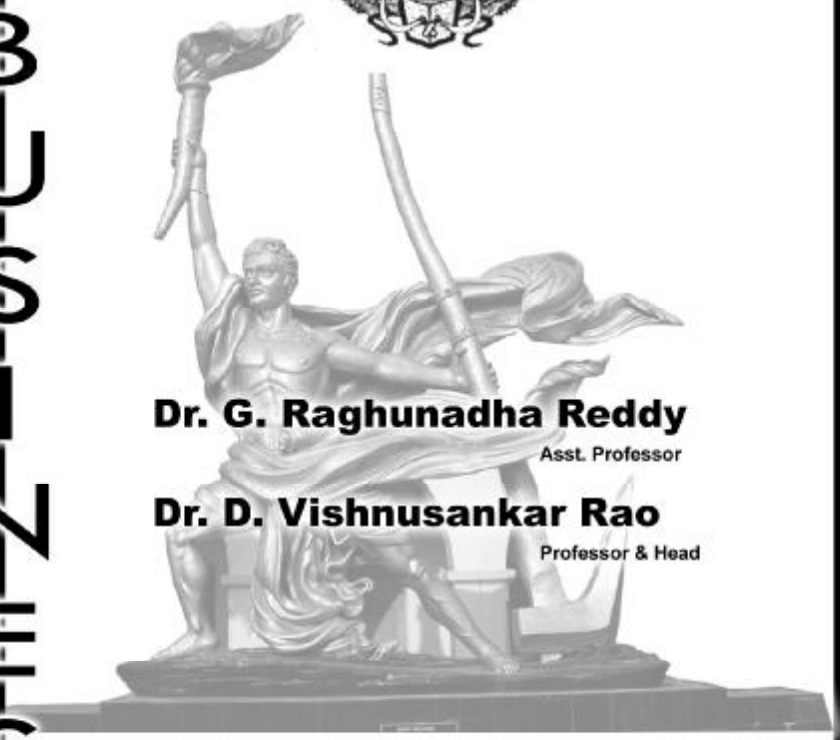
AGRIBUSINESS

MANAGEMENT

PRACTICAL MANUAL
AGRI BUSSINESS MANAGEMENT

COURSE NO. AECO 342 (1+1)



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ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY
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Certificate

Certified that this is a bonafide record of Practical work done by

Mr/Miss.....I.D.No.....

in Course No.**AECO 342 (1+1) AGRIBUSINESS MANAGEMENT** during the

First / Second Semester of -

Teacher in-charge

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BAPATLA

Place :

Date :

PREFACE

The curriculum of B.Sc. (Ag.) programme of Acharya N.G. Ranga Agricultural University was revised in the year 2007, based on the recommendations of Fourth Dean's Committee (2006) of ICAR. The courses in the discipline of Agricultural Economics were also revised. The course number AECO-342 – Agribusiness Management is a (1+1) credits course offered to the third year B.Sc. (Ag) students. Agribusiness Management is a specialized subject of study is gaining importance in recent times with the growth and development of agribusiness industry. Almost all SAU's and autonomous institutions introduced this course and also started offering degree and post graduate degree programmes by starting Schools of Agribusiness Management.

There is an immediate necessary to reorient the entire field of ABM education programmes in the country. It should be treated differently from the Agricultural Economics study. This reorientation may be in the form of restructuring the course contents, methods of teaching and learning processes, developing required study material and case studies preparation.

The publication of this practical manual is an exercise in the process of developing study materials for the use of teachers and students. This manual is developed from the experiences of the authors in teaching ABM course to undergraduate students in Acharya N G Ranga Agricultural University. Our experience is that most of the times the teachers of either confused or ignorant of how to handle the ABM course, particularly the practical component of the course due to the lack of exposure to the subject matter and teaching methods of ABM. This manual is developed in a sequential and systematic manner to experience the ABM practical environment. It will be of immense use to the teachers and students of ABM programmes to manage the practical classes successfully with a great ease and simplified procedures.

Bapatla

Jan-2010

With regards

G.RAGHUNADHA REDDY.
&
D. VISHNU SANKAR RAO.

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CONCEPTS AND TERMS OF AGRIBUSINESS MANAGEMENT

AGRIBUSINESS: Agri-business as a concept was born in ***Harvard University*** in ***1957*** with the publication of a book "A concept of Agri-business", written by *John David and A. Gold Berg*. It was introduced in Philippines in early 1966, when the University of the Philippines offered an Agri-business Management (ABM) programme at the under-graduate level. In 1969, the first Advanced Agri-business Management seminar was held in Manila.

- "***Agri-business is the sum total of all operations involved in the manufacture and distribution of farm supplies, production activities on the farm, storage, processing and distribution of farm commodities and items made from them" (John David and A. Gold Berg)***

All the sound and economic feasible business activities under different forms of organizations are being executed in these firms with the motto of earning profits on a continuous basis. Thus in a nutshell, the term agribusiness includes all the production, storage, processing transportation, sales and other marketing activities of firms dealing with farm products.

MANAGEMENT:

- Management is the *administration of business concerns* of public undertaking.
- It is *decision making process through which purposes and objectives of business firms* or organizations or human groups are *determined, clarified and effectuated*.
- MANAGEMENT is the whole activities by means of which the business units direct their desired actions towards achieving their set goals.
- It is accomplishment of desired objectives through establishing an environment favorable to performance by people operating in organized groups.
- Management is *unifying and coordinating action, which combines different activities of individual personnel in to meaningful and purposeful group endeavor.*

Hence, management in brief is the *efficient use of men, material and resources towards achieving specific objectives.* In order to achieve the desired objectives of an organisation through group action, "MANAGEMENT" is a must to direct, coordinate and integrate the activities and affairs of the organisation.

PLANNING: Planning is defined as the *forward thinking* (looking ahead) about *course of action* or *activity* (developing alternatives) based on full understanding of all the related factors and directed at specified objectives. Planning describes the adoption of specific programme in order to achieve desired results. It means the selection from among alternatives of future courses of action for the enterprise as a whole and each department with in it. It is determining goals, policies and courses of action and it involves the processes like work scheduling, budgeting, setting up procedures, setting goals or standards, preparing agenda and programming. In the body of management knowledge, Planning is the ***MUSCLE*** and it allow the other functions to move in the desired direction. Planning is not a forecast but an ***action oriented*** statement.

Purposes or Missions: Every kind of organization should have a purpose of establishment or mission. Generally many organizations may have a social purpose of producing and distribution of economic goods and services; it may accomplish this by fulfilling a mission of producing certain lines of

products. The mission of Reliance Oil Company is to search, produce, refine, market and producing wide variety of petroleum products. It is some times thought that the mission of a business, as well as objective is to make profit, to survive and do the task society entrusted to it. But this basic objective is accomplished by undertaking activities, going in clear directions, Achieving goals and accomplishing a mission.

Objectives or Goals: The planning process starts with setting of objectives. Objectives or Goals are the ends towards which the activity is aimed. Objectives are the statements developed by the top management, board of directors, and chief executives to define what they believe to be the organizations mission. These are the shining stars that provide light to the path of subsequent planning and thinking. They are the targets towards which goals are aimed.

Management has multiple objectives which are inter-related. Objectives mean short term goals in a business firm. Depending on the period of action objectives are classified as

- Short range objectives, which are to be fulfilled immediately with in a short period.
- *Long range objectives, which are also known as goals*. They can be terminated at a certain point in the long run or they can be continued depending up on the situation.

The objectives enable the managers to plan, organize, direct and control the business and other resources in proper direction. They also help in efficient utilization of resources in a business. Objectives should be broad, long-range, flexible, and not necessarily time-oriented. Most agribusiness will have at least five objectives, and a few might have ten or more. An organization with more than ten overall objectives is almost certainly mixing goals with its objectives.

Objectives are usually found on the following business areas:

1. Market standing (Position compared with competitors)
2. Growth and development (How much and fast should growth be?)
3. Profitability (what kinds and amounts of profits are feasible?)
4. Employee relation s and performance (What rewards and share of income should go to employees, and what is expected of them?)
5. Investor relations and return (What portion of earnings should go to investors?)
6. Public responsibility and relationships
   (What kind of business citizen does the company want to be?)
7. Physical resources (What plant equipment, tools, etc., are needed?)
8. Products and innovation (What emphasis will be placed on new products and research?)

Strategies: Strategies denote a general programme of action and an implied deployment of emphasis and resources to attain comprehensive objectives. According to Chandlar, the Strategy is "the determination of the basic long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary to carry out these goals". Ex: Nano car from TATA is a strategy to capture the market of adjacent countries as well as to pose competition to the native manufacturers.

Policies: Policies are used to guide one's thinking process during the planning or decision-making stage. The formulation of policies allows everyone to consistently make decisions that are in line with organizational objectives. The policy sets boundaries within which an agribusiness employee can exert individual creativity. Policies are not the objectives, although they are closely tied to objectives.

Procedure: A procedure is a step-by-step guide to a specific activity or function. In many cases, there is a definite need to set out just such a precise course of action. A procedure should not, in most cases, be applied to complex tasks of a long-range nature. If the business firm sought to implement its new purchasing policy, the procedure involved called for an employee to fill out a requisition form, submit it to the general manager for approval, then send it to the purchasing director. Procedures work best when they are applied to routine and recurring tasks of a relatively simple nature that require control. Both policies and procedures are of tremendous value to the new employee who is learning on the job, majorly to prevent unauthorized actions.

Practices: Practices represent what is actually done in the agribusiness, and they may conflict with policies and procedures. Managers have to be sure that policies make sense, are relevant, and are enforced, in order for them to become widespread practices. A course of action that is established on a recurring basis becomes a practice, often by tradition or habit more than anything else. For instance some agribusiness company practice to give sweets on Dewali to their employees, some follow a policy of sharing a portion of profits with their employees.

Rules: Rules are frequently confused with the policies and procedures. A rule is that it reflects a managerial decision that certain action be taken or not be taken. A rule requires that a specific and definite action be taken or not taken with respect to a situation. As a matter of fact, a procedure could be looked upon as a sequence of rules.

Programmes: Programmes are a complex of goals, policies, rules, task assignments, steps to be taken, resources to be employed, and other elements necessary to carry out a given course of action and are ordinarily supported by the necessary capital and operating budgets. Designing programme therefore truly requires the most rigorous application of systems thinking and action.

Budget: It is a plan of statement of expected results expressed in numerical terms. It may be referred as a "numberised programme". The financial operating budget is called as a profit plan and may be expressed in terms of labor-hours, units of products, machine-hours, etc.,
It is a fundamental planning instrument in many companies because it forces a degree of definiteness in planning.

ORGANISATION: In any business activity there is always a person who guides and controls its functions. He also co-ordinates and regulates all the factors which are employed in the business activity. Apart from monitoring it, he takes the responsibility of the outcome. We call such a person an entrepreneur (organizer) and the business activity which he is doing is called an enterprise or organization. If management is seen as a body of knowledge, then the organization is *skeleton or framework* on which the management is built.

An organization is defined as the activities of two or more persons were concisely coordinated towards a given objective.

The purpose of organization in an enterprise involves

1. *The process of identification, classification and grouping up of required activities*
2. *Grouping of activities in light of resources and situations*
3. *Assigning these activities to positions*
4. *Delegation of the authority to different persons and*

5. *Horizontal and vertical co-ordination of the authority and information relationships to enable them to carryout these activities very effectively and efficiently towards achieving the objectives.*

- Organization brings co-operation, harmony and integrity among the people.

Staffing: (Human Resource Management): It is defined as the process of filling the positions in an organization structure through identifying work-force requirements, inventorying the people available, recruitment, selection, placement, promotion, appraisal, compensation and training of needed people to carry out the business activities very effectively. Organization and staffing goes side by side. Staffing starts with recruitment of personnel. Recruitment starts with specification or qualifications of individual who will occupy important positions to carryout the activities of organization.

DIRCTION: Direction is nothing but motivating, ordering, guiding, leading, executing and supervising the organization. The good manager would always have good qualities of directing and building leadership that could help his staff in succeed in their work and derive job satisfaction in their work. Good directors always change their styles to bring about the desired changes. The function of directing is compared to HEART of body of management.

- ***The direction function of management has the following works:***
  1. *Assigning duties and responsibilities to personnel.*
  2. *Establishing the results to be achieved.*
  3. *Delegating the necessary authority*
  4. *Creating a desire for success.*
  5. *Supervising that the job is done properly by workers.*

Orders: Orders or instructions are the vehicles for messages with proper direction from top to bottom of an organization. Generally orders are unidirectional and moves from top to bottom operating units. A firm should be conditioned for effective direction. The manner in which it is organized could facilitate conditioning. The workers must also find meaning and purpose in the orders and in implementing the orders.

Motivation: The goal seeking behavior or goal directing behavior of individual is called as motivation. All the personal in the organization should be reoriented towards achieving the objectives. But this is not an easy task. Certain motivational devices are usually followed to make the direction effective such as rewards for better work; time bound promotions and better working conditions. Any way these are not the standard devices and vary from situation to situation. The organizer in firm has to motivate his staff towards better utilization of resources and move the things in right direction towards accomplishment of goals and objectives.

Leadership: The function of direction may also be described in broader terms as the task of making the organization take on life, of creating the conditions that make for interest in the job, vigor of action, imaginative thinking and continuous team work. This goal is one that cannot be reached by magic formulae. Its achievement rests in large measure upon the qualities of leadership exhibited by the manager. Leadership is helping individuals or groups to accomplish organizational goals. It is also, perhaps paradoxically, the process by which the manger attempts to unleash each person's individual potential, once again, as a contribution towards organizational

success. Successful managers must have a leadership style and capability that allows them to modify their management patterns to fit the changing times.

The changes in the management pattern are observed as below in the recent times according to the dynamic working conditions in the business.

YEASTERDAY		***TODAY***
Strong leadership	→	***Group leadership***
Arbitrary rewards	→	***Planned rewards***
No participation	→	***Meaningful participation***
Absolute power	→	***Diluted power***
Rigid organization	→	***Flexible organization***
Thing oriented	→	***People oriented***

Successful agribusiness managers know that the output is some total of the outputs of all those who work for them. Such managers recognize that no one is ever completely satisfied with any organization, and probably some will never be satisfied at all. What satisfies one person will not satisfy other. But the manager as a director will see that most of the people should be happy most of the time with satisfactions that they derive from their work. The good agribusiness manger will develop those qualities of direction and leadership that will help subordinates to succeed and to derive satisfaction from their work.

CO-ORDINATION: Co-ordination is unifying and synchronizing action of group of people in the firm. It is considered as the BRAIN in the body of management skills. Sound, good and command of management skills will keep the need for coordinating function at a minimum level. The good manager would always strive to co-ordinate operations, departments and individuals under their control and properly work for their integration to achieve the desired results. The good manger should identify the hidden talents of personnel by stimulating them through varied assignments that offer continuously increasing challenges and opportunities. He should have regular schedule of contacts with his staff. He should set himself as a good example to others. A good coordinator continuously and carefully seeks the participation of workers. His actions should always be result oriented. He should inspire confidence and motivate the staff with his skills.

Work climate: With out a proper working climate, none of the skills and principles of management can flower and bear fruits. Good managers know how to use these principles to create a productive working climate.

- ***Six Principles of creating the work climate:***
  1. *Set a good example himself by the manager*
  2. *Conscientiously seek participation*
  3. *Be goals-and results- oriented*
  4. *Give credit (in public) and blame (in private) as needed*
  5. *Be fair, consistent and honest*
  6. *Inspire confidence and lend encouragement*.

Communication: The key to the success of any of the management functions is the free flow of communication. The agribusiness manager is responsible for designing and implementing the communications process.

Free flow of information means that communications must flow not only downward (from management to subordinates), but upward (from subordinates to managers) and laterally (at the same level) to be effective. Too often managers depend almost exclusively on downward communications and then wonder why policies, procedures, and goals are misunderstood. Successful communications require feed back. Feed back allows the managers to whether understanding has indeed occurred. It also allows the good ideas and potential contributions of each employee to be part of the success mix of collective wisdom and knowledge found in the organization. The manager must provide the opportunity for this feed back and involvement through a carefully designed communications process involving comities, meetings, memos and individual contacts. People have emotions, misunderstandings and ego needs that sometimes get in the way, especially during seasonal peaks of hectic activity, when they get physically and emotionally tired. Effective management recognizes the need for interpreting the formal structure in terms of the human element, by adjusting and working through misunderstandings when they occur. No organizational structure can be successful without a constant concern about honest but tactful communication at all levels.

CONTROL: Control function is complementary to other management functions and considered as NERVOUS SYSTEM of body of knowledge that reports the function of the parts of the body to the whole system. Controlling is defined as the process of influencing the performance or executing the supervision, so that the results of organizational efforts will reach the expectations.

It measures the deviations from the desired course of action and there by suggests for desired direction.

- Massie stated four essential elements of control as follows:
  1. A pre-determined criterion / goal / benchmark.
  2. A means of measuring current activity quantitatively, if possible.
  3. A means of comparing current activity with a prefixed criterion.
  4. Some means or measures of correcting current activity to achieve desired criterion / goal.

Control does not mean restriction of power over subordinates. Control system sounds a warning when necessary for taking up remedies for problems. Through proper controlling, managers would become aware of weak spots in organizational, directional and co-ordinating efforts and operations of the business. Another important purpose is to evaluate the progress being made towards organizational goals. In the absence of control system employees can not respect the programmes, disregard and in-accuracy are likely to result.

AGRIBASED INDUSTRIES: Agro-based industries are those which have either directly or indirectly related to agriculture. In other words industries which are based on agricultural produce and industries which support agriculture come under Agro-based industries. Agro-based industries at a particular place is based on availability of raw material, hence they should be established in rural areas where the raw material availability is in plenty.

The need and importance of Agro-based industries arise to upliftment of rural people, due to uneconomical land holdings and seasonal nature of agricultural, under employment and disguised unemployment in rural areas, to generate new employment opportunities, to improve income generation and their standard of living, to keep the rural economy on-par with urban economy, to promote balanced growth between agriculture and industry, to solve the problems of exploitation of rural people or farmers by village traders and other marketing middlemen, to get fair market price, to reduce the transport cost to farmers, add value to the products through the processing, strengthening of infrastructure like electricity, communication etc., and leading to industrialization in rural areas, to develop backward areas, etc.,

Types of Agro-based industries:

1. Agro produce processing units: The agri-business industries which involve processing of agricultural produce are called Agro produce processing units. They do not manufacture any new product but they process the raw material or produce and add value to the product.
Ex: Rice mill, Groundnut decorticating units, Dal mills and oil mills, Fruit pulp making etc.,

2. Agro produce manufacturing units: These units manufacture entirely new products based on agriculture products as main raw material. The finished goods will be entire different when compared to its original raw material.
Ex: Sugar factories, backery, solvent extraction units, textile mills, straw board, Gur & Khand sari etc.,

3. Agro input manufacturing units: These nits produce goods which are used either for mechanization of agriculture or for increasing the productivity of agriculture.
Ex: Industries manufacturing machinery, pump sets, pesticides, fertilizers, seeds etc.,

4. Agro service centers: These are workshop based service centers engaged in repairing and servicing of pump sets, diesel engines and other equipments.

AGRICULTURAL PROJECTS: These are the investment activities in which capital resources are spent to create a productive asset for realizing benefits over time.

- Projects are the cutting edges of development.
- These are also considered as building blocks of investment plan.
- Project also refers to specific activity with specific starting point and specific end point to achieve a specific objective. It should be measurable in costs and returns.

Agricultural Projects are defined as the investment activities related to agricultural development in which resources and costs are incurred to create geographical capital assets (Gettinger, 1994)

Project is an activity, on which we spend money in expectation of returns with specific priorities for area development and reach specific clientele group.

In Agricultural Projects there is a gestation period i.e., the time period lapse between the investment time and returns of the projects.

Projects in general are the smallest operational entities or elements planned, formulated, implemented and evaluated as per the project cycle with specified goals of country's economic plans and programmes.

ALTERNATIVE COST VALUATION: In this method, the intangible benefits of multi purpose project are imparted monetary value. This is possible only if alternative would have been undertaken in the absence of project. Assume that multipurpose project improves drinking water facility, its foregone cost of drinking wells is used as surrogate value for improved drinking water facilities. Such surrogate values are termed as alternative cost valuation.

AMORTIZATION: It is the gradual repayment process or writing off an original loan amount. We can cite the depreciation amount of the asset as amortized amount because over the life span of the asset its purchase value is fully written-off. The capital recovery factor is compared of an interest portion and part of an amortization.

ANNUITY: It is the amount paid or received for a stated period of time.

APPRAISAL OF PROJECT: This provides all opportunities for appraisal team to assess, analyse every proposal, plan of the project to check for its appropriateness and viability and soundness of the project for its implementation in the specified area. The world bank team sends a separate appraisal team to carefully apprise the proposed project with regard to meeting its guidelines and if the project is with accepted standards & guidelines, then the project is accepted for implementation.

ASSETS: These are the properties or claims owned by individuals or business enterprises. There are three types of the assets which are divided on the basis of the liquidity.

- Current assets consist of cash and other items expected to be converted into cash with in short period say 1 season or with in 1 year period.
- Working or Intermediate assets have service life of 2-5 years include items of equipment or implements used in business farms.
- Fixed assets or durable assets include items of relatively long service life that are used for production of the goods and services. These include machinery, implements etc., Equipments, buildings, farm structures, land and other assets like patents and trade marks which do not have physical existence but of value to business are also included here.

WORKING CAPITAL: It is regarded as the ***life blood of a business***, because its efficient management will lead to success of business and its inefficient management will lead to failure of the business.

- Working capital can be defined as that portion of the assets in a business which is used to meet the day to day / current operations of the business. Examples: Seeds, fertilizers, labour etc.,
- The assets formed due to the working capital are relatively temporary in nature.
- From the accounting point all the current assets are called as working capital.
- In accounting, working capital is defined as difference between inflow and out flow of funds. It is otherwise called as net cash flow per year.
    - *Net cash flow / Yr = Cash in-flow – Cash out-flow.*

- Working capital is the excess of current assets over current liabilities of a business. It is otherwise called as net current assets or net working capital / year.
  - *Net working capital per year = Current assets – Current liabilities*
- Working capital may also be defined as total current assets employed before operating the business. It is also called gross working capital.
- Working capital is also called as circulating capital. At the beginning cash is provided by owners and lenders. A part of capital is invested on the fixed assets and the remaining cash is used to meet the current requirements like purchase of services, raw material or merchandise. By selling the products from the enterprise, cash will be received, which is used for the expansion of the business. This process indicates the circular flow of working capital, so named as circulating capital.

INTERMEDIATE GOODS OR SERVICES: These are the inputs used for further production of the goods towards consumption function. Final goods, in contrast will have ultimate form fit for consumption. Thus a certain good will be called intermediate or final good depending on its stage of use. For example, grapes used for juice are intermediate goods, where as grapes directly used for consumption are termed as final goods.

BENEFIT –COST RATIO: It is the ratio between the total discounted benefits over the life period of the project and the total discounted costs over the life period of the project.

BALANCE SHEET: It is the summery of assets, liabilities and net worth or owners equity of the business at a particular point of time. It is the snapshot (still picture) of the business solvency i.e. financial position of the enterprise at a specific point of time. Here Total Assets = Total Liabilities + Net worth, which is always in balance, so this financial statement is named as Balance Sheet.

BENEFIT TAX: It is the tax levied on project beneficiary to recover cost and a share of incremental benefit. It takes the form of betterment levy which is imposed on benefited land under project area.

FARM GATE PRICE: It is the price a farmer receives for his product or pays for inputs at the boundary of the farm. It is the price received by farmer without any transport cost or marketing cost.

CAPITAL: It is the produced means of production. It is the stock of funds and other assets possessed by individuals to be invested in the business. Equity capital is the excess of assets over liabilities.

CAPITAL RECOVERY FACTOR / PARTIAL PAYMENTS FACTOR: It is the annual installment of the loan to be repaid of 1 unit of currency in n years on unpaid balance with compound interest rate. It is the reciprocal of the Present Worth Annuity Factor.

CRITICAL PATH METHOD (CPM): It is the networking of activities in the form of a diagram that plots the sequence of activities for project planning and scheduling. It shows which activities must be completed earlier, which late and which activities can be delayed.

DEPRECIATION: It is the anticipated or expected annual reduction in the asset value due to wear and tear.

CUT-OFF RATE: It is the discount rate below which the project is considered unacceptable. It is the minimum acceptable Internal Rate of Return.

DEBT SERVICE: It is the payment made by a borrower to a lender. It may be payment of interest or payment of principle or loan commitment fees etc.,

ECONOMIC / EFFICIENCY ANALYSIS OF THE PROJECT: This is the analysis done using economic prices of project inputs and outputs. The efficiency prices are otherwise known as shadow prices or opportunity costs or accounting prices or values in use of goods or services. Generally in this analysis transfer payments such as taxes, subsidies, credit transactions are not considered. It is used to know whether the national income is increased due to the project or not. The IRR worked out with economic prices is termed as Economic rate of Return (ERR).

EXTERNALITY: This is the effect of the project felt outside, but not included in the valuation of the project. Externalities may be technological or financial. The training of the project workers for employment later in the project is an example of a technological externality. Some times projects affect the prices paid or received by others residing outside. Fertilizer price is increased due to high demand. The effect is called pecuniary or financial externality.

FINANCIAL ANALYSIS: This is the analysis of the project done using market prices of costs and benefits at constant prices.

CASH INFLOWS OF A PROJECT: These are the money values of goods and services received or produced by enterprises & increase the incremental net benefit stream of the project.

CASH OUTFLOWS OF A PROJECT: These include all payments that are made or goods and services of value that are consumed or transferred to other entities and decrease net benefit.

NET PRESENT WORTH (NPW): It is the present worth of total benefits over life of the project less the present worth of costs of project over the same time period. The benefits and costs of projects are generally discounted at opportunity cost of capital. While analyzing the mutually exclusive projects, accept the project with the highest NPW among alternative projects.

NETTING-OUT: It is the process of subtracting cost stream of the project from its benefit stream over the life span of the project.

PROJECT CYCLE: It is the circular diagram showing different interconnected phases in a project i.e. 1. Identification, 2. Formulation, 3. Appraisal, 4. Implementation, 5. Monitoring and 6. Evaluation.

PROJECTS AND PROGRAMMES:

Item	Project	Programme
Scope	Projects are specific components of programmes and they are micro in scope	These are macro in scope with broad goals and each programme may consists of different projects
Details	The details of the project are with more precision and accuracy regarding objectives, features, benefits, costs, etc., and final implementation	Programmes in general do not have these details and they are more related to national policies.
Gestation period	Projects have definite time schedule in completing the objectives and hence gestation period is generally is very short	It deals with broader goals of Nation or Nation's policies and they have large gestation period.

ACCOUNTS PAYABLE: These are amounts due to supplies of goods and services by the business firm which are brought on credit basis.

ACCOUNTS RECEIVABLE: These are the amounts owed to business enterprise by its customers for purchase of goods and services provided on credit.

AGGREGATION: In project analysis, it is the process of adding together all the costs and benefits of all the entities participating in a project. By doing so, we arrive at summary account of all costs and benefits of project from which we measure the credit worthiness of project.

OPPORTUNITY COST: If an input is used in a production process, it has no alterative use at that particular point of time. This means that the input will be loosing income from the another use or alternative use and the income foregone by this input from its alternative use is called opportunity cost.

Opportunity cost is the income that could have been received, if the input had been used in its most profitable alternative use. It is the value of the product not produced because the input was used for another purpose.

The real cost of the input is not the purchase price of that input. It is the income earned by that input in its alternative use, which is the next best opportunity. If the returns from the current use of the input are less than its opportunity cost, then the decision is to be changed.
Example: If the farmer has Rs.40 (only one dose of 10 kg N) at his disposal, he has 3 options i.e. investing in 3 crops. As per the table 4.2 if he apply that one dose of N on paddy, he get an income of Rs. 189. The farmer is foregoing the other two options i.e. spending on sugarcane or cotton. Between these two, sugarcane is giving more MVP of Rs. 166, which is the next best alternative foregone to sugarcane by that input is called opportunity cost.

SWOT ANALYSIS: The SWOT analysis is the first step in planning for agribusiness. Thus one of the keys to developing a sound business strategy is conducting a SWOT i.e., Strengths, Weaknesses, Opportunities, and Threats analysis for a business. With the SWOT a business's internal strengths and weaknesses are used to take advantage of external opportunities while avoiding threats.

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Exercise No: 01 Date: _____

ANALYSIS OF BALACE SHEET

Investment in agribusiness is a necessity for its growth and development. The invested money is either owned or borrowed. As the business gets increased, the capital requirement too gets enlarged forcing the business managers to be more vigilant in running the enterprise. The big firms have many assets as well as liabilities (debts) in general. The summary of the statement regarding the assets, liabilities and equity or net worth of the business firm have at a particular date is called as balance sheet. A balance sheet is a snapshot of a business' financial condition at a specific moment in time.

Utility of Balance sheet:

1. *Useful to know the solvency position of the business.*
2. *Useful to identify different components of the assets and liabilities that influence the financial solvency of the business.*
3. *It is important to develop financial test ratios and decision making.*
4. *Useful to develop the financial plans.*
5. *Useful to convince the lenders about the long term and short term solvency of the business for further financing.*

A balance sheet comprises all the assets and liabilities listed in a concise form with their monetary values at a particular date revealing the financial solvency of the business. If the assets are more than liabilities it is called net worth and its converse is called as net deficit. At any given time, assets must equal liabilities plus net assets (equity) hence the name balance sheet.

In a typical balance sheet, assets are shown on the left side and liabilities on the right side. Besides, at the end on its right hand side, the equity of the business is mentioned. Balance sheet can be easily prepared with the help of the latest business records. It can be prepared at any point of time to know the financial position of the firm. If the net worth increases over the different periods, it indicates efficient performance of the business.

Now the balance sheet formula is given as

Assets of the business = Liabilities of the business + net worth of the business

The typical balance sheet of the business firms generally discloses the following items.

1. The amount of invested capital (i.e., investment capital) in the business firm. It includes owners share capital invested in a business (this is also called net worth or equity capital or owned fund) and log term lenders fund (i.e., loan capital) and short term investment capital.
2. The accumulated undistributed profits or losses.
3. The fixed assets of the farm that fetch income.
4. The current assets of the farm which are at present consumed the current assets should have value, soil at a profit and readily convert into cash.
5. The current liabilities of the business farm. These are the items of expenditure incurred by the farm in the current year.

The balance sheet would enable us to know about in financial structure of business farm in a clean and abridged form in the current year. In a monopoly, the share of owners equity (net worth) is given but in partnership farm, the division of net worth is also shown. Finally we would know about financial liquidity and solvency of the farm.

The services of balance sheets of the business farm over years would reveal us whether capital position of the farm is increasing or decreasing, whether net worth is going up or down over years, what are the changes between debtors and creditors and ratio of debt to owned capital of the business, etc. Let us now know the different assets and liabilities and their classification.

Who wants to see the Balance Sheet?

Many people and organizations are interested in the financial affairs of your company, whether you want them to be or not. You of course want to know about the progress of your enterprise and what's happening to your livelihood. However, your creditors also want assurance that you will be able to pay them when they ask. Prospective investors are looking for a solid company to bet their money on, and they want financial information to help them make a sound decision. Your management group also requires detailed financial data and the labor unions (if applicable) will want to know your employees are getting a fair share of your business earnings.

Assets and their classification:

An asset is anything a business owns that has monetary value. Both assets and liabilities are classified based on liquidity concept. The case with which the asset is converted into cash is called liquidity. Assets may be ‘current’ or ‘fixed’ assets. Fixed assets (i.e., durable assets or long term assets) are held over time to aid in production process. They are held for future use (i.e., stocks). They are used in production process as an end consequence of output (debtor). The last two assets viz., stocks and debtors are maintained only for a short time and are easily converted into cash, as and when required by the business farm to meet its current obligations.

The current Assets are also known as floating assets and generally represent circulating or gross working capital. The business activities taken up by the farm will fairly realize current assets and as such this quantity or number will very depending on the need of the business.

During the production and marketing cycles current assets are used and if needed renewed. These include debtors (advanced payments (prepayments) made by the farm constitute debtors), growing crops and livestock ready for sale, materials in hand for use, petty cash (if your business has a fund for small miscellaneous expenditures, include the balance in that account here (unrestricted cash), short-term investments (also called temporary investments or marketable securities, these include interest- or dividend-yielding holdings expected to be converted into cash within a year. List stocks and bonds, certificates of deposit and time-deposit savings accounts at either their cost or market value, whichever is less), accounts receivable (the amounts due from customers in payment for merchandise or services), inventory (includes raw materials on hand, work in progress and all finished goods, either manufactured or purchased for resale), prepaid expenses (goods, benefits or services a business pays for in advance of actual use. Examples are office supplies, insurance, etc). All these current assets fetch required cash flow of the farm.

The current assets are categorized into liquid assets and working assets. Liquid assets (i.e., quick assets) are those assets which are either in money or in a form that are easily turned into money. Cash in hand or at the bank or near cash assets like debtors are called quick assets.

For example, a prepayment such as insurance premium paid during middle of the financial year extends its benefits after the end of the financial year. Let us assume that premium covers a further period of six months in the next financial year, then half the premium payment of insurance will appear in profit and loss statement and the rest will be shown in balance sheet as a debtor.

The physical working assets are in fact temporary assets which are usually turned into cash during the year. The example relevant here are livestock (except breeding stock), harvested crops or dead stock (except machinery), materials held in stores, etc. these working assets may be finished products or assets that are used up or consumed in the production process.

Fixed assets (capital assets, or durable assets). These are procured to get farm income over time, but not to earn profits by way of resale. They are maintained as a part of procurement equipment of farm business. Selling of such fixed equipment would affect productivity of resources viz., farm lands, buildings on the farm, plants machinery, breeding livestock and draught animals, vehicles, carts and equipment. It is better to show fixed assets with purchase costs, depreciation, together with their net book value. (Net book value of fixed assets is the purchase cost less depreciation). The classification of assets into current assets or fixed assets is based on type of business and their use. For example, harvester thresher is a durable asset for farmer, but it is a current asset for dealer.

The balance sheet is meant to describe the asset position at a given time, but it does not provide the true value of asses. A particular asset may have high price during inflation due to rising prices in the market, it, in contrast may lose value during depression.

Current assets are used up in one production cycle. Examples here are cash in hand, seed, cash in bank for investment on crops, debtors (i.e., prepaid expenses), products produced and readily on hand for sale, stock on hand, etc.

Liabilities (Debts):

Liabilities are all debts and obligations owed by the business to outside creditors, vendors or banks that are payable. These are the claims of outsiders on the business. These consist of funds owned by business that must finally be repaid to its creditors or lenders. Current liabilities and deferred liabilities in general constitute total liabilities.

Current liabilities are also termed as short term liabilities and should be repaid within one or two years. These include bank overdrafts, crop loans, interest payable on loan capital (debentures), dividend payable, accounts payable (amounts owed to suppliers for goods and services purchased in connection with business operations), notes payable(the balance of principal due to pay off short-term debt for borrowed funds), interest payable(any accrued fees due for use of both short- and long-term borrowed capital and credit extended to the business), taxes payable (amounts estimated by an accountant to have been incurred during the accounting period), payroll accrual (salaries and wages currently owed), etc.

Deferred, fixed or long-term liabilities: These have to be repaid within two or more years. Their repayment lasts for several years. Machinery loans, land development loans, orchard loans, issued share capital of business, debenture stocks, mortgages loan capital, etc., are fixed liabilities of the business farm. The net capital of the business is the value of net assets and it is computed subtracting current liabilities from total assets.

Capital invested on business constitutes loans and net worth. Net working capital is current assets less current liabilities. Gross working capital generally means the value of total amount of assets. The most liquid asset (i.e., cash) and the most liquid liability (i.e., money at call) are shown at the top of balance sheet, and the least liquid liability (*i.e.,* LT loan) at the bottom.

NET WORTH or NET ASSETS or OWNERS EQUITY

Also known as "equity", it is the total amount of money your organization has saved/retained from prior year operating fund balances. In the non-profit sector, equity is also called retained earnings or fund balances. Effectively, it is the difference between total assets and total liabilities.

Procedure of preparing Balance sheet:

Step 1: List all the current and working assets with their monetary value and sum the values of assets.

Step 2: List all the fixed assets with their monetary value and sum the values of assets.

Step 3: Estimate the total assets by adding the sum of the values of all the assets.

- Total Assets = Current assets + fixed assets

Step 4: List all the current and working liabilities with their monetary value and sum up.

Step 5: List all the fixed or long term liabilities with their monetary value and sum up.

Step 6: Estimate the total liabilities by adding the sum of the values of all the liabilities.

- Total Liabilities = Current liabilities + fixed liabilities

Step 7: Calculate the net worth or owners claim in the business.

- Net worth or owners claim = Total Assets – Total Liabilities

Step 8: List the retained earnings i.e. the amount of the net profit chosen to leave in the business.

Step 9: Complete the balance sheet by writing the balancing figure at the end of the statement.

- Total Assets = Total Liabilities + Net Worth

The important concepts of balance sheet:

Capital invested	=	Loans + net worth (equity
Net worth	=	Total assets – Total liabilities
Net working	=	Current assets – Current liabilities
Gross working capital	=	Value of total current assets
The most liquid asset	=	Cash in hand
The most liquid liability	=	Money at call
The Least liability	=	LT loan
Permanent working capital	=	Current assets required to produce goods and services continuously
Temporary or variable working capital	=	Assets which are required at different time periods, e.g., additional inventory, extra cash
Negative working capital	=	Current liabilities – current assets
Cash working capital	=	The real flow of money or value of current assets at a particular point of time
Deferred liabilities of term loans	=	Medium term loans + long term loans
Debtors	=	Prepaid expenses such as insurance premium taxes, levies

EXAMPLE 1. ***A CORPORATE BALANCE SHEET:***

BALANCE SHEET OF NAGARJUNA AGRICHEM LIMITED AT MARCH ,2009

(Rs. In Lakhs)

S No		Current Assets	March, 2011	Current year
I		Inventories		
	1	Raw Material	4512.92	
	2	work in progress (output in production process)	1447.45	
	3	Finished goods	3279.38	
	4	Traded products	83.10	
	5	Stores and spares	180.95	
		Sub total	9503.80	
II		Accounts receivable	8512.61	
III		Cash and Bank balances		
	1	Cash on hand	4.37	
	2	Cash with scheduled banks		
		i. In Current accounts	1470.79	
		ii. As Deposits	382.66	
	3	Interest accrued on deposits	8.29	
		Sub total	1866.10	
IV		Advances		
	1	Advances receivable in cash or kind	720.15	
	2	Claims receivable	23.12	
	3	TDS	26.38	
	4	Deposits with govt. departments	736.58	
	5	Deposits with others	0.52	
	6	Advances for share application money	1115.00	
		Sub total	2621.75	
		TOTAL CURRENT ASSETS	22504.26	

S No.		Current Liabilities	March, 2011	Current year
I	1	Dues to micro and small enterprises	357.34	
	2	Other creditors (Suppliers/Services)	7541.09	
	3	Unclaimed dividends (by shareholders)	71.95	
	4	Advances / Deposits received from customers	2188.98	
	5	Other liabilities	170.31	
		Sub total	10329.67	
II		Provisions		
	1	Income Tax	2174.82	
	2	Corporate dividend tax	75.96	
	3	Proposed eqity dividend	446.94	
	4	PF	21.14	
	5	Gratuity	86.09	
	6	leave encashment	12.24	
		Sub total	2817.19	
		TOTAL CURRENT LIABILITIES	13146.86	

Net current assets		9357.39

S No		Fixed Assets	March, 2011	Current year
I		**Tangible items**		
	1	Land	436.03	
	2	Buildings	2641.56	
	3	Plant and machinery	11588.12	
	4	Electrical installations	640.13	
	5	Furniture and fixtures	68.53	
	6	Office equipments	59.33	
	7	Vehicles	183.15	
	8	Other items	99.60	
		Sub total	**15716.44**	
II		**Intangibles**		
	1	Goodwill	36.42	
	2	License fee	26.39	
		Sub total	**62.81**	
III		**Other fixed assets**		
	1	Capital (plant/ machinery) work in progress	157.81	
	2	Advances on capital account	226.44	
		Sub Total	**384.25**	
			0.00	
		Total Fixed assets	**16163.50**	

S No		Net Worth	March, 2011	Current year
I	1	**Share capital** Issued & subscribed share capital @ Rs.10 each	1489.82	
		Sub Total	**1489.82**	
II		**Reserves & surplus**		
	1	Capital reserve	20.94	
	2	Securities premium	247.84	
	3	General reserve and money transfer from Profit and Loss Account	3500.00	
	4	Balance in P & L Account	9856.11	
		Sub total	**13624.89**	
		Total Net worth	**15114.71**	

Deferred Liabilities

III		**Secured loans**		
	1	Term loans (Machinery)	2965.70	
	2	Term loan (Cash credit)	4281.41	
		Sub total	**7247.11**	
IV		**Unsecured loans**	887.97	
V		**Differed tax liability**	2271.12	
		Total LT Liabilities	**10406.19**	

- Total Assets = Total Liabilities
- Total Assets = Current Assets + Fixed Assets = 22504.26 + 16163.50 = 38667.76
- Total Liabilities = Current liabilities + Deferred Liabilities = 13146.86 + 10406.19 = 23553.06.

(***Note: Hypothetical data may be used for the Current year situation for better explanation of various items)***

EXAMPLE 2 : ***BALANCE SHEET OF ROYAL INDUSTRIES***

Let us assume that Royal Industries, a private limited company, has been formed by a group of 10 friends on 1st June in the current year. Each friend has contributed Rs 3 lakh in cash. As a result of this transaction, the company's Balance Sheet would appear as follows:

June 1, Current Year

Assets	Amount (Rs)	Liabilities	Amount (Rs)
Cash	30,00,000	Capital	30,00,000

It is understood that cash should appear under Assets but we need to know why capital is shown under Liabilities. For accounting purpose, a company/business firm is considered as an entity separate from its owners/promoters. This is known as the Principle of Separate Entity. This principle requires that every business transaction be viewed from the perspective of the firm and not from the point of view of the owners. It is for this reason, that the capital represents liability for the company as conceptually, company has the obligation to pay back to the owners. In the absence of this principle, it will be difficult to determine the true income (or loss) of a business firm because there will be no record either of the capital bought in by the owner(s) or the withdrawals (in cash off and on) made by them. Sources (being payable) are liabilities and Resources (being the ownership of firm) are assets.

Let us further assume that out of Rs 30 lakh, Rs 20 lakh is deposited in a bank on 2nd June by Royal Industries. As a result of this transaction, it is imperative that cash balance will reduce to Rs 10 lakh and a new item 'Bank Balance' will appear on the assets side.

On June, 2nd

Assets	Amount (Rs)	Liabilities	Amount (Rs)
Cash	10,00,000	Capital	30,00,000
Bank Balance	20,00,000		
	30,00,000		30,00,000

Assume further the company purchases goods worth Rs 6 lakh against cash payment on 4th June (Being a new firm, the supplier will not sell on credit and he may not accept cheque either). Evidently, cash reduces to Rs 4 lakh (Rs 10 lakh - Rs 6 lakh) and a new asset in the form of 'Stock of Finished Goods' would appear in Balance Sheet.

On June, 4th

Assets	Amount (Rs)	Liabilities	Amount (Rs)
Cash	4,00,000	Capital	30,00,000
Bank Balance	20,00,000		
Stock (Finished Goods)	6,00,000		
	30,00,000		30,00,000

Do you see a similarity here? What happens in our personal life to our cash balance also holds true for the business records. Cash balance gets reduced when it is spent. Please note that no change has taken place either in the bank balance (as the firm has neither deposited into bank nor withdrawn) or in capital account. Two sides of the Balance Sheet again tally and the composition of assets only change. This equality will always exist unless the accountant has committed a mistake. In operational terms, it implies that every business transaction has two-fold effect. This is called the Principle of Duality/Double Entry. Additional transactions shown in this example will further re-enforce this contention.

During 5th and 8th June, Royal Industries has cash sales of Rs 5,00,000 (for goods costing Rs 4,00,000). Evidently, there is decrease of stock by Rs 4,00,000 (cost price) and increase in cash by Rs 5,00,000 (selling price). The difference between sales revenue and cost (that is of Rs 1,00,000) is Profit. As per the Separate Entity concept, profits are payable to the owners and, hence they are liabilities of the company.

On June, 5th to 8th

Assets	Amount (Rs)	Liabilities	Amount (Rs)
Cash	9,00,000	Capital	30,00,000
Bank Balance	20,00,000	Profits	1,00,000
Stock (Finished Goods)	2,00,000		
	31,00,000		31,00,000

Let us further suppose that the company decides to venture into its own manufacturing activity. For this purpose, the company buys a small industrial shed for Rs 8 lakh and machinery for Rs 10 lakh. The payment is made through a cheque on 15th June. As a result, the Balance Sheet would be (please try on your own to draw it) as follows:

On June, 15th

Assets	Amount (Rs)	Liabilities	Amount (Rs)
Cash	9,00,000	Capital	30,00,000
Bank Balance	2,00,000	Profits	1,00,000
Stock (Finished Goods)	2,00,000		
Building/Shed	8,00,000		
Machinery	10,00,000		
	31,00,000		31,00,000

It is important to note that the composition of the Balance Sheet undergoes change with every business transaction (not in terms of gross total). Thus, in a way, Balance Sheet is a snapshot of financial position (in terms of assets owned and liabilities owed) of a firm at a particular point of time, say as on June 15. It is valid for that reference date/day only and its position is bound to change on the following day as soon as a new business transaction takes place.

Assume that Royal Industries is a relatively known entity and suppliers of goods and raw material are willing to transact business on credit basis. It purchases raw material worth Rs 3 lakh from Reliable Suppliers on credit on 18th June. This transaction will be recorded in the name of 'Stock' (Raw Materials) on the assets side. As the sum is payable after the expiry of the credit period (say 30 days) to Reliable Suppliers, it will be shown on liabilities side and the two sides will be equal as per the Principle of Duality. The company is optimistic of business growth. To finance expansion, it estimates an additional requirement of Rs 10 lakh. It negotiates a loan for 3 years from State Financial Corporation at 14% interest rate, against the mortgage of the building and the machinery and obtains the cheque on 25th June.

On June, 18th and 25th

Assets	Amount (Rs)	Liabilities	Amount (Rs)
Cash	9,00,000	Capital	30,00,000
Bank Balance*	12,00,000	Profits	1,00,000
Stock (Finished Goods)	2,00,000	Reliable Suppliers (Creditors)***	3,00,000
Stock (Raw Material)	3,00,000	14% Loan	10,00,000
Building**	8,00,000		
Machinery**	10,00,000		
	44,00,000		44,00,000

Note:
* Is higher by the sum received from State Financial Corporation
** Ownership continues with Royal Industries.
***As the sum is payable, Reliable Suppliers are creditors.

This Balance Sheet is the most comprehensive we have drawn hitherto. It indicates that the firm owns assets worth Rs 44 lakh and there are two sources of financing these assets, namely, owners (Rs 31 lakh) and outsiders (creditors and lenders (Rs 13 lakh)). Another useful way of visualizing Balance Sheet is that it is a statement of Sources, from where finances have been raised, and Resources, in which money has been invested. Evidently, Sources (being payable) are liabilities and Resources (being the ownership of firm) are assets. In accounting, liabilities can be bifurcated into two broad categories:

- Internal liabilities, more commonly known as Owners' equities = Capital + Profits
- External liabilities, consisting of contribution made by creditors and lenders towards financing assets of a firm.

Accordingly, there can be more than one way of presenting the two sides of a Balance Sheet. The three possible ways are as follows:

- Liabilities = Assets .....(1.1)
- Sources = Resources..... (1.2)

Owners' equity* + Liabilities** = Assets..... (1.3)

Note:
* Means stake/claims of owners in assets.
** Obviously representing external obligations or external equities.

Possible Combination of Accounting Transaction
Likewise, a business transaction can assume shape in any one of the four possible ways:
- Increase in Liability, followed by an increase in Asset
- Decrease in Liability, followed by a decrease in Asset.
- Increase in one Liability and decrease in another Liability.
- Increase in one Asset and decrease in another Asset.

Equations 1.1 to 1.3 are more popularly called as ***Fundamental Accounting Equations***. Being more informative, Accounting Equation 1.3 should be preferred.

Let us continue with the example of Royal Industries. Assume that the whole stock of finished goods, costing Rs 2 lakh, has been sold on 45 days credit on 27th June for Rs 2,60,000 to Solvent Buyers & Company. Consequently, profits will increase by Rs 60,000 (Rs 2,60,000 - Rs 2,00,000) and other changes in the Balance Sheet (B/S) will appear as follows:

On June, 27th

Assets	Amount (Rs)	Liabilities	Amount (Rs)
Cash	9,00,000	Capital	30,00,000
Bank Balance*	12,00,000	Profit (Rs 1,00,000 + Rs 60,000)	1,60,000
Solvent Buyers & Co. (Debtor)*	2,60,000	Reliable Suppliers (Creditors)	3,00,000
Stock (Raw Material)	3,00,000	14% Loan	10,00,000
Building	8,00,000		
Machinery	10,00,000		
	44,60,000		44,60,000

Note: *As the sum is receivable, Solvent Buyers & Co. is a debtor.

During 28th and 30th June, Royal Industries has incurred and paid in cash the following expenses:

Salaries	Rs 30,000
Rent of the shop	Rs 10,000
Electricity	Rs 2,000
Stationary	Rs 2,000
Refreshments	Rs 3,000
Telephone, postage and courier charges	Rs 1,000
Miscellaneous expenses	Rs 2,000
Total expenses	Rs 50,000

According to the Separate Entity concept, profits are liabilities. By the virtue of the same concept, expenses are assets of the firm as they are claims of the company on owners. Expenses are borne by owners. As a matter of fact, profit figure to be taken in the Balance Sheet should be net of the expenses (and, in practice, it is that way only).

Evidently, profit figure shown in the Balance Sheet is at an inflated value. In accounting, it is known as gross profit (Selling Price - Cost of Goods Sold). As expenses reduce gross profit, net profit for Royal Industries will be (Rs 1,60,000 - Rs 50,000) Rs 1,10,000.

June, 28th and 30th

Assets	Amount (Rs)	Liabilities	Amount (Rs)
Cash (Rs 9,00,000 minus Rs 50,000)	8,50,000	Capital	30,00,000
Bank Balance	12,00,000	Net Profit (Rs 1,60,000 - Rs 50,000)	1,10,000
Solvent Buyers & Co.	2,60,000	Reliable Suppliers (Creditors)	3,00,000
Stock (Raw Material)	3,00,000	14% Loan	10,00,000
Building	8,00,000		
Machinery	10,00,000		
	44,10,000		44,10,000

Thus, assets consist of cash, bank balance and other similar valuable resources owned by a business firm such as buildings, machinery or resources on which it has a legal right to receive from debtors.

Questions:

1. Identify the elements that consisted in the financial make up and condition of the business.
2. Whether the owners claim is sufficiently high in the business or not? What contributed for the high or low owners claim?
3. What are the measures do you suggest for improving the long term and short term financial stability of the business under consideration?

Follow up assignments:

Verify the given financial condition of the business with the current year's balance sheet with the help of hypothetical data for Nagarjuna Agrichem Ltd. What are the changes you can identify? Are the changes good for the business or not?

RATIO MEASURES OF BALANCE SHEET

The current Ratio:

$$\text{Current ratio} = \frac{\text{Total current assets}}{\text{Total current liabilities}}$$

The Working Ratio:

$$\text{Working ratio} = \frac{\text{Total current assets + Total working Assets}}{\text{Total current liabilities + Total working liabilities}}$$

Acid Test Ratio or Quick Ratio:

$$\text{Quick ratio} = \frac{\text{Cash Receipts + Accounts receivable + market securities (bonds or Shares etc.,) to be realized in more than one year}}{\text{Total current liabilities}}$$

Current Liability Ratio:

$$\text{Current liquidity ratio} = \frac{\text{Total current liabilities}}{\text{Owner's equity}}$$

Debt Equity Ratio:

$$\text{Debt equity ratio} = \frac{\text{Total Debts or liabilities}}{\text{Owner's equity}}$$

NET CAPITAL RATIO

It is defined as ratio total assets to total liabilities

$$\text{Net capital ratio} = \frac{\text{Total assets}}{\text{Total liabilities}}$$

This ratio indicates the long term solvency position and thus the financial safety position of the firm. It gives a good idea of firm's chance of raising more external funds. It is used to estimate the likely effect of any future changes of the financial structure of business firm.

What should be the safe level of net capital ratio?

The safe ratio in fact depends on the type of firm and current level of business uncertainly. If price and cost variations are very common in its area, then the firm probably requires a higher net capital ratio *i.e.,* more than two.

The per cent equity:

This is more closely related to the net capital ratio. This is the just net worth or owner's equity expressed as percentage of total assets.

$$\text{The percent equity} = \frac{\text{Equity}}{\text{Total assets}} \times 100$$

It is actually the share of the capital that belongs to the owner's business. it measures stability of the firm and its capacity to borrow required capital. The rest of the capital (i.e., creditors and loans) is provided extremely. The higher the level of per cent equity, the safer is the business in its activities. It represents the owner's equity in the business.

Fixed assets – net worth ratio:

The ratio of fixed assets to net worth is usually worked out as percentage. Both lenders and owners examine this ratio. it is better that this ratio should be fairly equal to 100 per cent.

It is also important to relate source of capital with types of assets possessed. The total value of fixed assets should be less than the long term outside liabilities plus net worth, or else fixed assets should be purchased by S T loans. But we should keep in mind the maxim which says that "Never borrow short term loans to invest on long term loans". Here we have to analyze the series of balance sheets of the firm. Then, it is wise to know whether increased fixed assets are equal to increased retained profits and deferred liabilities or simply to increased current liabilities.

A high ratio of fixed assets to net worth usually indicates a low current ratio and inadequate liquid resources. Conversely, a low ratio may indicate a top heavy structure with inadequate earning power.

$$\text{Fixed assets-net worth ratio} = \frac{\text{Total fixed assets}}{\text{Net worth}} \times 100$$

Flexibility of the business :

The availability of different types of assets with the business and its current ratio indicate the flexibility aspects of the business. The too high percentage of fixed costs in total costs is deemed as weak management of the business. This may lead to very low or poor profits.

$$\text{The proportion of fixed costs in total costs} = \frac{\text{Fixed liability}}{\text{Total liability}} \times 100$$

As a percentage this ratio gives us the share of the capital tied up in equipment, building, structures, etc. If this ratio is high, it means the business will have liquidity problem. Hence, it is a guide to flexibility. This ratio will vary between firms, particularly between owned firms and rented firms. if liquidity is a problem, then it is better for the business to sell some of its fixed assets.

$$\text{A ratio of deferred liabilities to net worth} = \frac{\text{LT loans}}{\text{Equity}}$$

This ratio is also called gearing of the capital. This ratio provides guidance with regard to gearing of the business to its financial stability of the business. This ratio is otherwise called as the ratio of owned funds or equity to loan capital. The gearing of capital shows the extent to which the business is working on borrowed capital.

Exercise: Work out the given ratio measures of the balance sheet with the help of data given in the earlier examples (Nagarjuna Agrichem Ltd and Royal Industries) and conclude the result with proper explanation.

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Exercise No: 02 Date: _____

ANALYSIS OFPROFIT AND LOSS STATEMENT

This is entirely different from the balance sheet in the sense that in the balance sheet we consider assets and liabilities and did not take care about the operational efficiency in terms of receipts and expenses. It shows the net income realized from the enterprise, so the name income statement.

It is the statement or summery of the receipts and profits as well as the expenses and losses during a specified period of time say a season or a financial year. In income statement monetary values are assigned to the inputs and outputs. At the end it shows the profits or losses.

1. Gross margin = Total sales – Cost of goods sold
2. Profit = Gross margin – Expenses.

It identifies the rupee volume of business during a year or a specified period of time. All costs are not entered in to this statement. Only when the asset is used or sold, it becomes an expense to the business because it has to be replaced.

Utility of Profit and Loss Statement:

1. *To know the profitability of the business.*
2. *To identify the different sources of income and expenditure.*
3. *To judge the ability of the manager in running the business.*
4. *To develop the financial test ratios for decision making.*
5. *To prepare the financial plans*
6. *To convince the lenders about the profitability of the business to get borrowed capital.*

Procedure of preparing a Profit and Loss Statement of a business firm:

Step 1: Sum up the rupee value of the products and services that have been sold during the period specified (period for which profits and loss statement i. e. accounting period) is to be prepared

Step 2: Estimate the net sales amount by deducting goods returned, discounts, allowances etc. if any, from the total sales amount.

Total sales = Rs.
Less goods returned = Rs.
Less discounts and allowances = Rs.
So, net sales = Rs.

Step 3: Estimate the cost of the goods sold as follows.

Net inventory costs or charges = Beginning inventory – ending inventory.

Cost of goods sold = Net inventory charges + other purchases.

- We can arrive at the cost of goods sold by adding the various items of the working costs like materials, raw materials, wages etc., used for production.

Step 4: Calculate the gross margin by taking the difference between total sales and the cost of the goods.

- Gross margin = Total sales – Cost of goods sold

Step 5: Estimate and sum up all the other operating expenses not included earlier like marketing, administrative, general over head expenses etc., associated with the specific sales transacted during the accounting period.

Step 6: Calculate the net operating margin (NOP) by subtracting the operating expenses from the gross margin.

- Net operating margin = Gross margin – operating expenses

Step 7: Estimate the non-operating income and expenses if any.

Step 8: Estimate the Net Profit Before Taxes (NPBT) or Profit Before Taxes (PBT).

- PBT = (NOP + Non-operating income) – Non-operating expenses.

Step 9: Estimate the bottom line of the business i.e. Profit After Tax (PAT) i.e. Net income or Net Profit After Tax (NPAT) by deducting taxes from PBT.

- NPAT = NPBT – Profit tax.

Example 1:

P & L STATEMENT OF NAGARJUNA AGRICHEM LIMITED AS AT MARCH ,2009

(Rs. In Lakhs)

		Receipts		March, 2009	Current year
I		**Sales**			
	1	Domestic sales		36299.81	
	2	Exports		29321.05	
				65620.87	
		Less of Excise Duty / Sales Tax & VAT		5549.28	
		Balance		**60071.58**	
	3	Conversion charges		53.37	
	4	Income from operations		410.82	
			Sub total	**60535.78**	
II		**Other Income**			
	1	Interest (TDS receivable)		19.24	
	2	Profit on sale of fixed assets		52.39	
	3	Bad debts written off received		60.47	
	4	Other Income sources		33.98	
			Sub total	166.07	
				0.00	
		Total receipts		**60701.85**	

		Expenses	March, 2009	Current year
I		**Manufacturing & other costs**		
	1	Consumption of the raw material	35600.52	
	2	Cost of traded goods sold	2694.71	
	3	Consumption of the packing material	2347.68	
	4	Power and fuel	2276.66	
	5	Repairs to plant machinery , buildings	62.93	
	6	Consumption of stores and spares	568.80	
		Sub Total	**43551.29**	
	7	Decrease in stocks	1446.13	
		Sub Total	**42105.16**	
II		**Administrative, selling, distribution and other expenses**		
	1	Salaries, Wages, and allowances	2237.59	
	2	PF and other funds	286.65	
	3	Staff welfare expenses	150.82	
	4	Rent	77.94	
	5	Taxes	78.07	
	6	Communication expenses	102.81	
	7	Traveling and conveyance	494.26	
	8	Technical consultancy	18.77	
	9	legal and professional charges	120.75	
	10	Insurance	69.84	
	11	Directors traveling expenses and sitting fees	18.86	
	12	Payments to auditors	12.19	
	13	Software expenses	11.88	
	14	R and D expenditure	45.96	
	15	Exchange fluctuation of foreign currency	740.84	
	16	Loss on discarded assets	1.10	
	17	Loss on sale of assets	9.61	
	18	Bad debts written off	51.64	
	19	Selling and distribution expenses	2026.76	
	20	Miscellaneous expenses	263.78	
		Sub Total	**6820.11**	
III		**Excise Duties and VAT + Sales tax**	**2.32**	
IV		**Interest**		
	1	Term loans	285.69	
	2	Working capital loans	656.47	
	3	Other loans	580.51	
	4	Bank charges	197.97	
	5	Financial charges	190.19	
		Sub Total	1910.83	
V		**Depreciation**	**1823.39**	
		Total Expenditure	**52661.81**	

I		**Profit before tax (PBT)**	**8040.05**
II		**Provision for payment of different taxes**	
	1	Current Tax	2887.79
	2	Deferred tax	191.95
	3	Benefit tax	33.84
		Sub Total	**3113.59**
III		**Net profit or Net Profit after tax (PAT)**	**4926.46**
IV		**Balance brought forward from the previous year**	**6301.15**
V		**Amount available for appropriation**	**11227.61**
VI		**Appropriations**	
	1	General reserve	500.00
	2	Interim dividend	297.96
	3	Final dividend	446.94
	4	Corporate dividend tax on interim dividend	50.64
	5	Corporate dividend tax on final dividend	75.96
		Sub total	**1371.50**
VII		**Balance carried to balance sheet**	**9856.11**
VIII		**Earnings per share**	**33.07**
		Profit after tax	**4926.46**
		Earnings available for the equity share holders	**4926.46**
		No of shares taken for computing the EPS (Basic & diluted same)	**148.98**
		EPS (Rs.)	**33.07**

(***Note: Hypothetical data may be used for the Current year situation for better explanation of various items)***

Example 2: *P&L Account of Royal Industries for June, Current Year.*

Let us attempt to prepare a P&L Account of Royal Industries for the month of June. As this account represents items related to revenues and expenses of a firm, it has two sides, revenues on right side and expenses on left side.

Expenses	Amount (Rs)	Revenues	Amount (Rs)
Cost of goods sold (equivalent to cost of goods purchased and sold)	6,00,000	Sales revenue	7,60,000
Gross Profit	1,60,000		
	7,60,000		7,60,000
Salaries	30,000	Gross profit	1,60,000
Rent of the shop	10,000		
Electricity	2,000		
Stationary	2,000		
Refreshments	3,000		
Telephone, postage and courier charges	1,000		
Miscellaneous expenses	2,000		
Net profit	1,10,000		
	1,10,000		1,10,000

From the foregoing, it is apparent that P&L account provides a condensed summary of all the revenues and the expenses of a firm, for a specified period, at one place. The perusal of this account provides a crystal bird's eye-view to the owners' and the concerned the way net profit of Rs 1,10,000 has been earned. It may be recalled that such clear-cut picture was not plausible in the Balance Sheet. In fact, Balance Sheet is not actually intended to provide the same.

Thus, Income Statement constitutes another significant financial statement of a business firm. It is an important supplement to Balance Sheet. In fact, there exists an inter-locking relationship between the two. P&L account provides summary figure of all items related to revenues and expenses of a firm in terms of net profit (Revenues > Expenses) or net loss Expenses > Revenues) to Balance Sheet. Evidently, without net profit or net loss amount, two sides of Balance Sheet will not match. In operational terms, net profit or loss is a link-pin between P&L account and Balance Sheet.

Again, the tallying of the two sides of the Balance Sheet perplexes the beginners. However, the Separate Entity concept of accounting provides the explanation. According to the concept, revenues (since payable to owners) will augment owners' equity/capital and expenses (since receivable from owners) will decrease it. As a result, surplus or the profit and deficiency or the loss, as per the situation, is transferred to capital account. Let us explain this in the context of Royal Industries.

Capital (1st June)	Rs. 30,00,000
Add Sales Revenues (during June)	Rs. 7,60,000
Less Expenses (during June)	Rs. (6,50,000)
Capital (effective)/Owners equity (June-end) (including profit of Rs 1,10,000)	Rs. 31,10,000

Exercise: Work out the P & L statement of the two examples in the form of the procedure given. Work out the related financial test ratios relevant to the P & L Statement for the given examples.

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Exercise No: 03 Date: _____

ANALYSIS OF CASH FLOW STATEMENT

It gives the summery of cash inflows and cash outflows of a business organization in a particular period, say a season or a year, hence the name cash flow summery. It is simply the difference between rupees received and rupees paid out. It summarizes the changes in cash position between dates of two balance sheets.

This is generally prepared from the data of the income statement and funds statement of the business enterprise. From this we will work out net benefit stream of the business. We first determine actual cash inflows from different sources and outflows of the business in a specified period of time and then deducting the outflows from inflows, we arrive at net benefits i.e cash flows. These cash flows are discounted to determine the viability of the projects through different techniques like, Net Present Worth (NPW), B-C Ratio, Internal rate of Returns (IRR), Net Benefit Investment Ratio (N/K Ratio) etc.,

Usually cash flow statement is prepared for the future, hence the name cash flow budget. It is prepared by dividing the total period of accounting in to convenient sub periods like months or quarterly or half yearly, so that the managers know about the magnitude of the cash flows in that specific portion of the accounting year. It separates cash inflows and outflows according to operating, financing and investing activities of the firm.

Utility of Cash Flow Statement:

1. *It analyses the sources and uses of cash in the business.*
2. *To determine the availability, flow of cash and liquidity.*
3. *To make projections of cash inflows and cash outflows for the future.*
4. *To know the changes in the cash position.*
5. *To show the cash flows in terms of operating, financing and investing activities of the firm.*
6. *To plan repayment schedules, based on cash flows.*

Procedure:

Cash flow statement is prepared by rearranging all cash inflows and outflows in to cash flows from operating activities, financing activities and investing activities of the firm.

Step 1: List cash received from each operating activity and sum the total cash received

Step 2: List the different operating activities for which the cash was paid with respective amounts and sum the total cash paid

Step 3: Calculate the net cash provided by the operating activities by taking the difference between total cash received from and total cash paid for different operating activities.

Step 4: List cash received from each investing activity and sum the total cash received

Step 5: List the different investing activities for which the cash was paid with respective amounts and sum the total cash paid

Step 6: Calculate the net cash provided by the investing activities by taking the difference between total cash received from and total cash paid for different investing activities.

Step 7: List cash received from each financing activity and sum the total cash received

Step 8: List the different financing activities for which the cash was paid with respective amounts and sum the total cash paid

Step 9: Calculate the net cash provided by the financing activities by taking the difference between total cash received from and total cash paid for different financing activities.

Step 10: Calculate the net increase or decrease in cash and cash equivalents from all the business activities by summing up the net cash provided by operating, investing and financing activities.

Step 11: Note the cash and cash equivalents at the beginning of the year.

Step 12: Estimate the cash and cash equivalents at the end of the year by adding the net increase or decrease in cash for the operating period to cash at the beginning of the year.

Example:

CASH FLOW STATEMENT OF NAGARJUNA AGRICHEM LIMITED AS AT MARCH ,2009

(Rs. In Lakhs)

		Cash flow from operating activities	March, 2009	Current Year
I		**Net profit before taxation**	**8040.05**	
		ADD:		
	1	Depreciation	1823.39	
	2	Foreign exchange fluctuations - unrealized loss	429.21	
	3	Loss on sale of fixed assets	9.61	
	4	Discarded assets	1.10	
	5	Interest	1910.83	
		Total	**4174.13**	
		LESS:		
	1	Foreign exchange fluctuations - unrealized gain	117.28	
	2	Profit on sale of assets	1.08	
		Sub total	**118.36**	
		Total	**12095.82**	
II		**Operating profit before working capital changes**	**12095.82**	
		LESS:		
		Increase in trade and other receivables		
		1. Debtors	1944.86	
		2. Inventories	1825.12	
		3. Loans and advances	1066.87	
		4. Minus other current assets	(-)3.56	
		Sub total	**4833.29**	
		ADD:		
		Increase in trade payables	2337.73	
		Cash generated from operations	9600.25	
		LESS:		
		Tax paid	1362.39	

	Net cash from operating activities	**8237.87**	
B	**Cash flow from investing activities**		
	Inflow:		
	Sale of fixed assets	12.47	
	Outflow:		
	Purchase of fixed assets	3757.04	
	Decrease in creditors (projects)	277.54	
	Minus of Capital work in progress	1355.63	
	Net cash used in investing activities	2678.96	
C	**Cash flow from Financing activities**		
	Inflow:		
	Inter corporate deposits	200.00	
	Working capital loans		-
	Outflows:		
1	Term loans	769.97	
2	Working capital loans	441.05	
3	Short loans and advances	1000.00	
4	Interest paid	1910.09	
5	Sales tax deferral	2.33	
6	Corporate dividend tax	88.62	
7	Equity dividend	521.44	
	Sub-total	**4733.49**	
	Net cash used in financing activities	**4533.49**	
Net cash and cash equivalents from all the activities		**1037.89**	
Net cash and cash equivalents at the beginning of the year		**819.92**	
Net cash and cash equivalents at the end of the year		**1857.81**	

(***Note: Hypothetical data may be used for the Current Year situation for better explanation of various items)***

Exercise:

1. What are the major use and source of funds items in the business under study?
2. Which activity contributed mostly to the net increase or decrease of net cash of the business?
3. Project the cash flow statement for next year by considering some expected changes in the business activities.

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Exercise No: 04 Date: _____

BREAK EVEN ANALYSIS OR VOLUME-COST ANALYSIS

We use many principles or techniques for evaluating alternative decision problems which some times confront managers and proprietors of agribusinesses. These analytical tools are numerous. Some are complex and calls for sophisticated programming models. The most important and more commonly used decision tools are Volume Cost Analysis (VCA) and Investment Analysis. The most agribusinesses are seasonal in nature and large investments are made within short period of time. This shows how important the investment decisions are in using the fixed assets of the business. The volume cost analysis or breakeven analysis is used to find solutions on investment problems. This is primarily used to build a relationship between costs and volume of business to be performed, hence the name Cost Volume Profit Analysis (CVP Analysis).

Breakeven point (BEP) and Breakeven output (BEO):

The BEP analysis is useful to describe the minimum sales volume necessary to avoid losses and the sales volume that can achieve profits. It is the point of sales volume at which the total revenue is equal to total cost i.e. no profit-no loss point. In other words the quantity at which all costs allocated to a product are equal to all the sales revenue from it. It is also regarded as a point of indifference, at which the producer could not able to decide whether to continue the business or stop it. At quantities smaller than the BEP there is a loss and at larger quantities there is profit.

Utility:

1. To now how different costs are affected by the volume of business done.
2. To know the level of business necessary to break even i.e. minimum sales necessary to avoid losses.
3. To earn a specific amount of targeted profit under various assumptions of costs and prices.
4. To know the impact of changes in selling price on volume of business and profits.
5. The analysis is useful in product pricing, marketing strategies and use of a machine / equipment to make it pay.

Graphical approach:

Step 1: Plot sales volume on horizontal axis. Horizontal axis is spaced in equal distances either in terms of rupees, units or as % of capacity of sales. Mark sales at different activity levels.

Step 2: Vertical axis is used to mark revenue, fixed cost and variable cost. The vertical axis is also spread in equal parts.

Step 3: Draw a similar vertical line on the hand side of the chart to complete the square.

Step 4: Determine the total fixed cost and draw the fixed cost curve. Verify that the line is parallel to the horizontal axis.

Step 5: Draw the variable cost line from the zero cost point i.e. from origin.

Step 6: Draw the Total Cost (TC) line. Observe that TC starts from the fixed cost point on the vertical axis. It is a linear or straight line because the variable cost per unit of product production is assumed as constant.

Step 7: Draw the total revenue or total sales curve. Draw the total revenue line from the origin (zero sales). Observe that this is also a straight line indicating the constant price for the product irrespective of the volume of the sales.

Step 8: Identify and mark the BEP i.e. the point of intersection of the TC and TR curves.

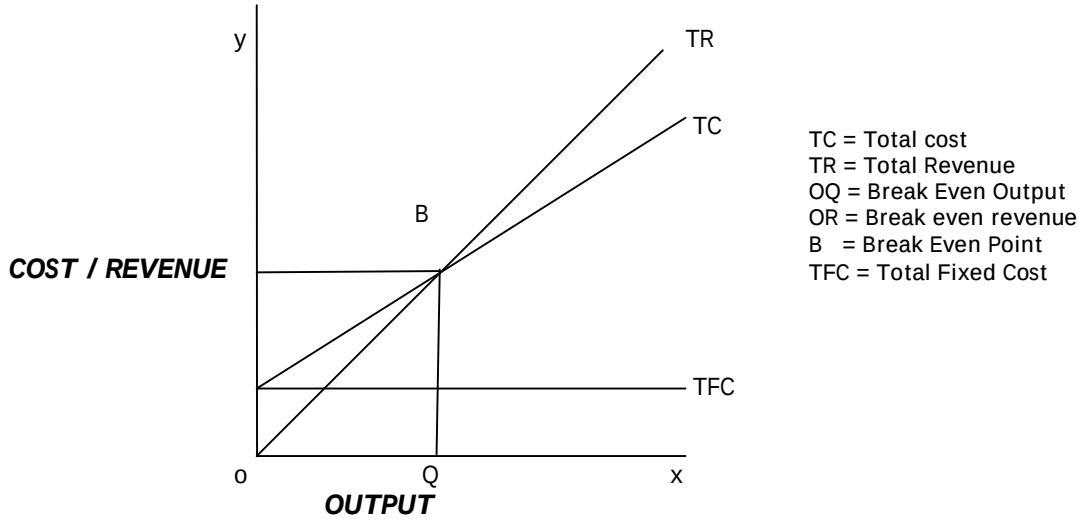
Step 9: Marking of profit and loss zones:

Mark the area to the left of the BEP as loss zone, which is in between TC and TR lines.

Mark the area between TR and TC which is right to the BEP as profit zone.

Step 10: Margin of safety: The excess of the actual sales over the Break even sales is known as margin of safety.

Figure: BREAK EVEN CHART



In the production of goods and services, we will see a particular level of output or product level at which the total cost of the firm (TC) are equal to total returns of firm (TR). This point at which TR = TC is called break even point (BEP) and its corresponding output level is termed as break even output (BEO). This is shown at point, 0 in the graph below. To the left of O, there is loss and to the right of O the firm is gaining from its production.

Algebraic method:

Step 1: Identify and sort out the fixed and variable costs

Step 2: Summarize the fixed costs

Step 3: Summarize the variable cost pet unto d production or sales.

Step 4: Calculate sale price per unit.

Step 5: Calculate the CTO (contribution to overhead) per unit. CTO is portion of each unit of sales that remain after variable costs are covered.

CTO (per unit) = Sale price per unit – Variable cost per unit
Total contribution = Unit contribution X units sold.

= Total fixed cost + profits.

PROFIT = Total contribution – Total fixed cost.

Step 6: Calculate the BEP (sales volume to cover all costs) as follows

$$1.\ BEP = \frac{\text{Total fixed cost}}{\text{CTO}}$$

$$2.\ \text{BEP in units} = \frac{\text{Total fixed cost}}{\text{Selling price per unit – Variable cost per unit.}}$$

$$3.\ \text{BEP in rupees} = \frac{\text{Total fixed cost}}{\text{1 - Variable cost per unit / Selling price per unit}}$$

$$4.\ \text{BEP as \% of estimated sales} = \frac{\text{Total fixed cost}}{\text{Total contribution}}$$

$$\text{Or} \quad \frac{\text{Break even sales}}{\text{Estimated sales capacity}}$$

$$5.\ \text{Contribution ratio} = \frac{\text{Sales – Variable cost}}{\text{Sales}}$$

Let us assume that fixed cost of the firm is Rs.10,000 the unit sale price of product (S) is Rs.200, the value of V is Rs.190, then BEO = 10000 ÷ 200-190 = 10000 ÷ 10 = 1000. This means the firm should produce a minimum of 1000 units of product per nit time so as not to incur any loss.

Step 6: Margin of safety: It is the difference between the normal capacity of the firm and break even output of the firm. Under the conditions of risk and uncertainty it is so far to have a process of production with high margin of safety. The positive figure of this indicator reveals the shock-absorbing capacity of the enterprise in the event of fluctuations in returns against anticipation owing to any unforeseen eventuality.

1. Margin of safety (in units) = Total output – output at BEP

2. Margin of safety (in rupees) = Total revenue –Revenue at BEP

$$3.\ \text{Percentage margin of safety (units)} = \frac{\text{BEO}}{\text{Volume of output}} \times 100$$

$$4.\ \text{Percentage margin of safety (rupees)} = \frac{\text{BEO in monetary value}}{\text{Total revenue}} \times 100$$

For example, if the firm's normal capacity is 1500 units of product, and its break even output is 1000 units of product, then its margin of safety is 500 i.e. (1500 – 1000). Total revenue (TR) is worked out multiplying total output (Q) by its unit price (P) i.e., TR = Q * P ……. (2)

Here, the star denotes multiplication of Q by P.

In terms of fractional relationship, TR is specified as TR = f (Q), ……. (3)

This means total revenue depends on levels of output produced (Q) given price of percent of output P.

Similarly, total cost (TC) is determined by Q and it is expressed as TC = f (Q) ……. (4)

In algebral form these are hypothesized as TR = 24Q – $0.4Q^2$ …… (5)

TC = 30 + 8Q ……. (6)

Profit is defined and TR – TC ……. (7)

$\Pi = 24Q-0.4Q^2-30-8Q = 16Q-0.4Q^2-30$ …… (8)

To maximize profits, we have to take first derivative of equation (7) and equate it to zero, and solve for Q

$$\Pi = \frac{d\Pi}{dQ} = 16-0.8\,Q = 0 \quad \ldots\ldots\ldots\ldots\ldots\ldots (9)$$

$$0.8Q = 16$$

$$Q^* = 16 \div 0.8 = 20$$

If the firm produces 20 units of output, it maximizes profit and this is the break even output of the firm.

The difference between unit sale price of product and the variable cost per unit of the same product is often called contribution to overhead (CTO). Considering this, now the break even point (BEP) is defined as

$$BEP = \frac{\text{Fixed cost (FC)}}{\text{Contribution to overhead}} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (10)$$

The break even point or output is subject to change depending on the levels of fixed costs and CTO. If fixed costs, viz., salaries of employees and charges of utilities in a business firm are increasing, then the agribusiness has to increase its sales revenue or decrease variable cost per unit of output. Sales revenue can be increased either by producing more units of product or by increasing sale price of the product per unit.

Break even analysis has many implications for managerial decision problems. For example, it can help the managers of the agribusiness as to how many additional units of its product should be produced, if the firm wants to get additional 10 per cent or 20 per cent or 30 per cent of profit in future years over and above the present break even output. In that case, simply additional profit required to get can be added to fixed costs and work out BEO, putting the same value of CTO in the BEP formula. By doing so, we can get additional sales of product necessary to get the desired level of profit.

During normal years, necessary potential technologies should be adopted to increase the output of the firm rather than sale price of the product. However, during inflation, it is also necessary to raise the product price on line with rival firms. But we must remember that inflation in the economy has many evils and impedes the growth and development of different sectors in the economy.

Changes in cost of production of product do affect the level of BEO. Under such situations, the manager has to employ this tool to workout BEOs for different changed proportions of variable costs and fixed costs. Thus, with the help of break even analysis, we can determine the effect of changes in variable costs, fixed costs, profit levels, product prices on break even output of the agribusiness.

Classroom exercise:

- Work out BEOs for the data of different agribusiness assuming different proportion of changes in the product prices, salaries of employees, labour wages, variable costs, fixed costs, etc.

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Exercise No: 05 Date: _____

FINANCIAL RATIO ANALYSIS

The ratio analysis is a process of determining and interpreting the numerical relationship based on financial statements. Financial statements provide a wealth of information to number of persons and institutions interested in agribusiness. Proprietors, managers and Govt. agencies etc., all of them look at these statements from different perspectives. Hence they should be carefully and realistically prepared for giving correct information. Analysis of financial statements, viz., balance sheet and profit and loss statement should be often made comparing one firm with another similar firm over time and space. Returns on investment is the most basic and very important ratio to measure the profit. Financial analysis is in fact a managerial tool for agribusiness. These ratios provide the managers of the agribusiness the important insights for making flexible decisions for successful operations. Some ratios are expressed in reverse order, for instance, sales to receivable ratio to one person may be ratio of receivables to sales to another manager. Either case is correct, but its interpretation and its relevant decision should be carefully done.

All ratio measures and their comparison should be case don actual date of similar firms. Altogether the different firms which produce different products should not be compared with their ratio coefficients. But comparison of ratios between companies of similar nature over time in the same agribusiness are justified and relevant decisions should be taken. Trend is an important feature of financial ratio analysis, for example, gradually improving ratios over time are more impressive than declining ratios. The development of large number of ratios may lead to confusion and chaos. Hence, ratios should be specifically selected based on the nature of problem. All managerial decisions should be base don ratio analysis.

Utility of Ratio analysis:

1. *To make comparisons of past performance with the present performance of the business.*
2. *Help to communicate the business unit's financial position to interested parties with in and outside the organization.*
3. *Useful to monitor and judge the profitability, liquidity, solvency and resource use position of the business at any time.*
4. *To determine the firms credit worthiness.*
5. *To develop a standard criteria or indices to financial data comparisons by eliminating weaknesses of rupee differences.*

Most agribusiness personnel want ratio analyses to monitor profitability, liquidity, solvency and resource use efficiency. These ratios will be related to balance sheet, profit and loss statement (income statement) of the business firm. These ratios are studied under the following headings.

- *Profitability ratios or indexes*
- *Liquidity ratios or indexes*
- *Solvency ratios or indexes*
- *Operational efficiency ratios or indexes*

THE PROFITABILITY RATIOS: These ratios reveal the profitability and performance of business firms. These ratios reveals the combined effect of various business activities of the firm.

Earnings on sales ratio : This reflects operative efficiency and pricing policy of the business firm. Earnings of the business are affected by changes in pricy policy. Low prices may generate increased sales but reduce sales to zero. The pricing policy should be favorable to business.

$$1.\ \text{Earnings on sales (EOS)} = \frac{\text{Earnings}}{\text{Sales}}$$

This ratio may change from 5% to 60%. This ratio provides good reading on sales projections.

$$2.\ \text{Profit on sales (POS)} = \frac{\text{Net profit}}{\text{Sales}}$$

This ratio shows the ability of business firm to pay interest ton its investment. It provides information for managerial decisions regarding equity and borrowed capital alternatives.

Profit on equity capital (POES) : This ratio is used to determine prudence of investment in the assets of the business. The return to equity or owned funds of business is obtained dividing the net profits by equity of the business.

$$3.\ \text{POES} = \frac{\text{Net profit}}{\text{Equity (Net worth)}}$$

The business employs this ratio as an indicator of value of their stocks.

Gross margin (GM): Any declined level of GM provides a signal for immediate and effective management. Prudent changes are required then.

$$4.\ \text{GM} = \frac{\text{Sales} - \text{Costs of goods sold}}{\text{Sales}}$$

If the business firm lowers the price for its product there will be an increase in the turnover, this in turn offsets the decline in sales margin. If the price is increased, the earning power of the business firm will increase. Thus, there are two important measures concerning the better management of the firm, viz., 1) Profits on sales (pos), 2) Return on investment (ROI). Return on investment is also known as earning power ratio of the firm. ROI is directly affected by 1) use levels of assets of firm 2) the amount of earnings obtained by firm due to sales, *(earnings ÷ sales).* The intensity of the assets use is measured by number of times assets turnover in a period. This, in other words, is given by *(total sales ÷ total assets).* The first assets - turnover concept indicated that higher sales volume of assets in associated with higher ROI. The earnings are depending upon operating efficiency and price policy. On the cost side, labour expenses, administrative expenses and selling costs (advertisement costs) are important.

5. Percentage return on investment = Turnover of assets x percentage of earnings of sales (i.e. earnings power of business)

$$\text{6. Turnover assets} = \frac{\text{Total assets value}}{\text{Net sales}}$$

(Here the net sales means return drawn on sales of goods and services less allowances if any)

$$\text{7. Percentage earnings on sales} = \frac{\text{Operating income}}{\text{Net sales}}$$

(Net sales – cost of sales gives the net operating income of business)

Assets turnover ratio suggests that higher the return from the sales volume produced by the business with the given assets, greater would be the ROI. The firm should push its sales to the point whether physical capacity is exhausted. But in reality, most agribusiness have some slack in their capacity and typically struggling to maintain or increase sales levels up to their capacities.

The earnings of the business reveals as to how the managers of business firms deal with operating efficiency and plans and programmes of Govt.

$$\text{8. Operating ratio} = \frac{\text{Operating expenses}}{\text{Net Sales}} \times 100$$

$$\text{9. Operating Profit to sales ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \text{ OR } \frac{\text{Earnings Before Interest \& Tax (EBIT)}}{\text{Net sales}}$$

$$\text{10. Net profit to sales} = \frac{\text{Net profit}}{\text{Net Sales}} \times 100$$

$$\text{11. Earning power (EP)} = \frac{\text{EBIT}}{\text{Total assets}}$$

$$\text{12. Returns on investment} = \frac{\text{Profit Before Taxes (PBT)}}{\text{Equity capital}} \text{ OR } \frac{\text{EBIT}}{\text{Capital Employed}}$$

$$\text{13. Return on equity (ROE)} = \frac{\text{Profit After Tax (PAT)}}{\text{Equity capital}}$$

$$\text{14. Dividend per equity share} = \frac{\text{Dividend per equity stock}}{\text{No. of equity shares}}$$

$$15.\ \text{Earnings per share (EPS)} = \frac{PAT}{\text{No. of shares}}$$

$$16.\ \text{Price Earning Ratio} = \frac{\text{Market value of the share}}{\text{Earnings per share (EPS)}}$$

$$17.\ \text{Pay out rate} = \frac{\text{Dividend per share}}{EPS}$$

LIQUIDITY RATIOS: These ratios will indicate the firm's ability to meet its short-run financial obligations.

Current Ratio: The important liquidity ratio is current ratio. This ratio indicates the capacity of the manager to meet the immediate financial liquidity. If the current assets are more than the current liabilities and if the borrower fails to repay the loan, his is the case of willful-default in spite of his position being solvent. If it is worked out as less than one due to certain unforeseen contingencies, his case for further lending cannot be ruled out by the institutional agency, as it is a temporary setback and he may be given a chance to prove his credit worthiness. Current ratio reflects the liquidity with in one year's time.

$$1.\ \text{Current ratio (CR)} = \frac{\text{Total current assets}}{\text{Total current liabilities}}$$

Acid test ratio or Quick Ratio: The urgent liquidation problems accounts receivables, marketable securities, etc., may cause decline in CR. Managers use another liquidation ratio called acid ratio. This can be arrived through the following options:

$$2.\ \text{Quick ratio} = \frac{\text{Cash Receipts + Accounts receivable + market securities (bonds or Shares etc.,) to be realized in more than one year}}{\text{Total current liabilities}}$$

$$\text{Acid test Ratio} = \frac{\text{Total current assets} - \text{Inventories}}{\text{Total current liabilities}}$$

$$\text{Acid test Ratio} = \frac{\text{Liquid assets}}{\text{Total current liabilities}}$$

Accounts receivables will drop if there is a drain on cash of the business. In particular, bankers carefully look at this ratio while advancing short term loans. Higher figures of AR will give full

confidence. The new business firm will have less ratio. The case of converting inventory to cash (i.e., liquidity) must be considered carefully in case of lower ratio.

AR reflects adequacy of cash and income surpluses to cover all current liabilities during the period of one to two years. If there is no difference in the income position of the enterprise with in that period, current ratio and acid test ratio reflect the same position.

SOLVENCY RATIOS : The managers of business firms must always keep their firms solvent. This means the firms ability to meet long term obligations (solvency) should be increased. The decisions like when to borrow and own to increase returns on own investment funds are based on solvency ratios. There are in fact many solvency ratios. These are computed as

$$\text{1. Solvency Ratio (1)} = \frac{\text{Total liabilities}}{\text{Net worth (equity)}}$$

When this ratio is 0.60, it means total liabilities will constitute 60% of networth of owners equity or owned funds.

$$\text{2. Solvency Ratio (2)} = \frac{\text{Networth}}{\text{Total net assets}}$$

There is no exact standard in this ratio. But usually this ratio is less than 50 poer cent.

A third solvency ratio is computed as follows

$$\text{3. Solvency Ratio (3)} = \frac{\text{L T Loans}}{\text{Networth}}$$

EFFICIENCY RATIOS OR ACTIVITY RATIOS: The efficiency of the business firm is revealed form these ratios. The turnover ratios are being used to know the degree of intensive use of assets of the business. It is computed as

$$\text{1. Turnover Ratio} = \frac{\text{Total sales}}{\text{Total assets}}$$

An index of 2.5 here means, sales are 2.5 times higher than assets in the business. Turnover ratios if increased over time, it implies the business is in prosperity. Higher this ratio, greater would be the efficiency of the firm. For most of the business firms, the inventory turnover ratio is very important. The business policies are very much influenced by the magnitude of this ratio. It is worked as

$$\text{2. Rate of Turnover (ROT)} = \frac{\text{Sales}}{\text{Average inventory}}$$

The average inventory here is worked out taking into consideration the beginning and ending inventories. Considering only ending inventory in seasonal nature of agribusiness will be misleading. This ratio indicates how successfully the working capital of the firm is managed by the firm. 10 and

above percentage of turnover will be obtained by business depending on the nature of business. However in case of seasonal agricultural business firm, this ratio will be more compared to regular business firm. If capital is tied up in the inventory, a higher margin will be required on sales because too much stock is in the hand of business.

A high rate of turnover indicates the lost opportunity of sales due to many factors.

$$\text{3. Assets turn over ratio} = \frac{\text{Net sales}}{\text{Total Assets}}$$

$$\text{4. Inventory turn over} = \frac{\text{Cost of goods sold or sales}}{\text{Inventory}}$$

$$\text{5. Working capital turn over} = \frac{\text{Net sales}}{\text{Net working capital}}$$

$$\text{6. Debtors turn over} = \frac{\text{Credit sales}}{\text{Debtors}}$$

$$\text{7. Collection period} = \frac{360}{\text{Debtors turnover}}$$

$$\text{8. Operating ratio (\%)} = \frac{\text{Operation expenses}}{\text{Gross revenue}} \times 100$$

$$\text{9. Return on sale (\%)} = \frac{\text{Net income}}{\text{Revenue}} \times 100$$

$$\text{10. Return on equity (\%)} = \frac{\text{Net income}}{\text{Equity}} \times 100$$

$$\text{11. Return on assets (\%)} = \frac{\text{Operating income}}{\text{Gross assets}} \times 100$$

RECEIVABLE RATIO: Managers must be cautious in determining this. Accounts receivable may change from time to time or from season to season in a business firm. And this should be considered. This ratio is computed as (Accounts receivables ÷ sales) x 365 days = days sales in receivables.

DEBT MANAGEMENT RATIOS OR LEVERAGE RATIOS: These ratios give the answers regarding the ability of the enterprise to pay off the debts.

$$\text{1. Debt-Equity Ratio} = \frac{\text{Total liabilities}}{\text{Total equity}}$$

$$\text{2. Percentage of debt financing} = \frac{\text{Creditor funds}}{\text{Total assets}} \times 100$$

$$\text{3. Equity to assets ratio} = \frac{\text{Total equity}}{\text{Total assets}} \times 100$$

$$\text{4. Creditor ship to Equity Ratio} = \frac{\text{Creditor funds}}{\text{Equity funds}}$$

$$\text{5. Interest coverage} = \frac{\text{EBDIT}}{\text{Interest charges}}$$

$$\text{6. Leverage Ratio} = \frac{\text{Capital employed or Net assets}}{\text{Net worth}}$$

$$\text{7. Net Capital Ratio} = \frac{\text{Total Assets}}{\text{Total Liabilities}}$$

CREDIT WORTHINESS RATIOS

$$\text{1. Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{2. Debt-Equity Ratio (LT Loans)} = \frac{\text{LT Loans}}{\text{LT Loan + Equity}}$$

GROWTH RATIOS: Measures growth in key areas of the business.

$$\text{1. Total Growth} = \frac{\text{Beginning value - Ending value}}{\text{Beginning value}}$$

$$\text{2. Annual Growth} = \ln \frac{\text{Ending value}}{\text{Beginning value}} \div n\text{-}1.0$$

Class room exercise:

- Explain the implications of above ratios to business management.
- Whether the ratios are high / low / average? Interpret ratios in relation to company's performance.
- Finally conclude how successfully the company pursued its goals and targets in relation to the financial efficiency.

Assignment:

- If the company has to face an adversity, predict its impact on the selected ratios and what measures to be taken to improve the financial position.
- Compare the ratios with past ratios of the company and with other similar companies in the industry.

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Exercise No: 06 Date: _____

DEVELOPMENT OF BUSINESS PERFORMANCE "TRACKING SYSTEM CHART"

The Return on investment is directly influenced by earning, intensity of assets use and leverage of the firm. The total influence can be depicted in the form of a continuous flow chart called as 'Tracking system chart'. This concept of performing Tracking system chart was based on the Dupont model. It is to demonstrate the inter-relationship among various activities and their influence on the profitability and performance of business.

The Dupont model is built around the following relationship:

1. Return on sales X Total asset turns X Leverage = RONW (Return On Net Worth)

In the ratio form the above can be written as……

$$\frac{\text{Net Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} \times \frac{\text{Liabilities + Net Worth}}{\text{Net worth}} = \text{RONW.}$$

$$\text{i.e., } \frac{\text{Net Profit}}{\text{Net worth}} = \text{RONW.}$$

This concept is developed around the notion of three paths to profits.

$$\text{3. Operating Path} = \frac{\text{Net Profit}}{\text{Sales}} = \text{Return on sales}$$

$$\text{4. Investment Path} = \frac{\text{Sales}}{\text{Net Worth}} = \text{Assets Turn Over}$$

$$\text{5. Debt Management path} = \frac{\text{Liabilities + Net Worth}}{\text{Net Worth}} = \text{Leverage}$$

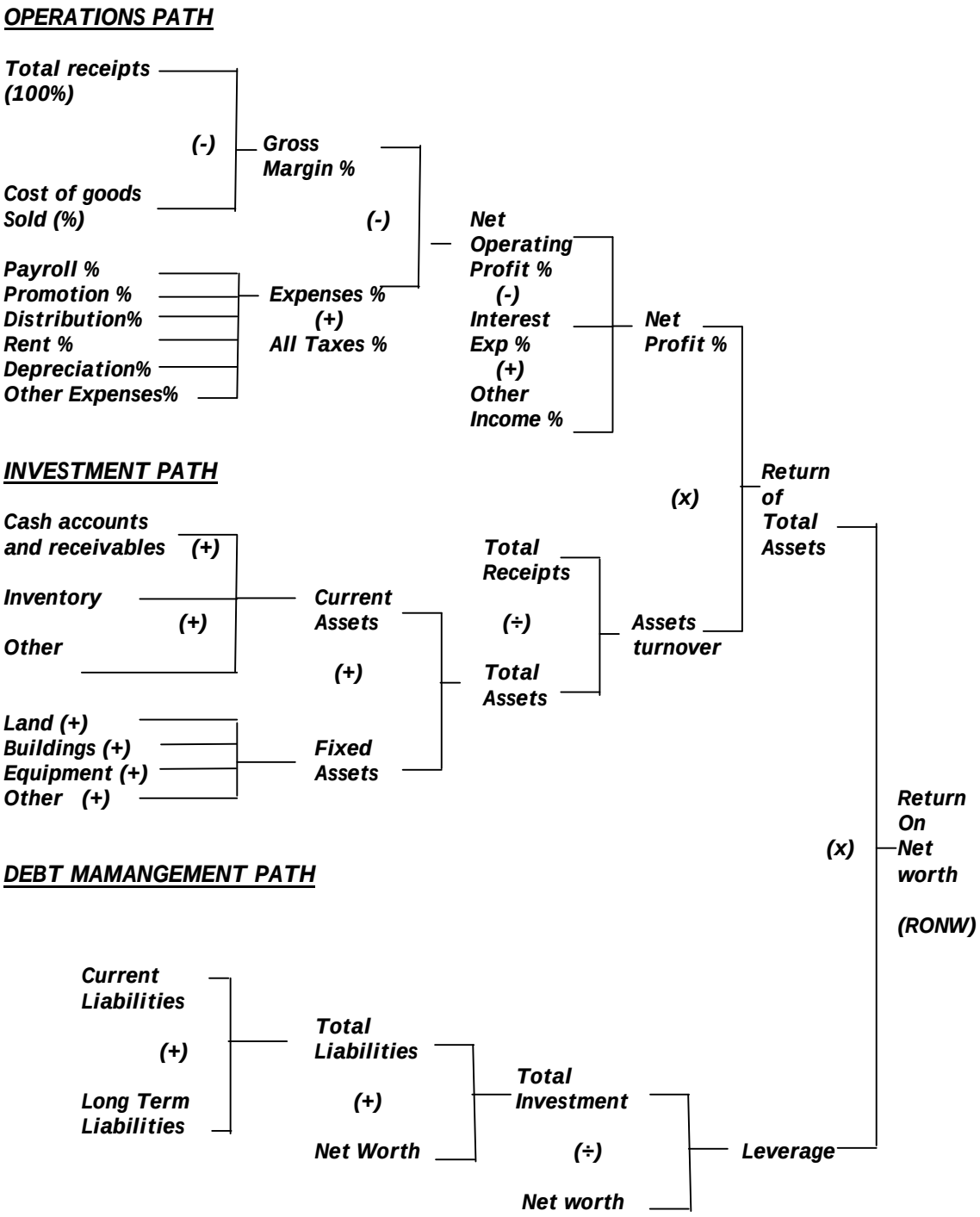
Utility of performance tracking system:

1. *Useful to monitor or track the performance of the business at any point of time.*
2. *Helps in determining what actions are needed to move the firm's activities towards its profits and ROI goals.*

3. *The tracking system chart indicates that the ROI is directly influenced by earnings, intensity if the assets use, and leverage of the firm.*

4. *Brings the manager face to face with internal and external changes and problems related to the business directly.*

Procedure of constructing 'Business Performance Tracking System Chart':



Questions:

- Identify the most important elements that have influence in each of the three paths of the tracking system. Identify the effect of these important elements on RONW. Suggest the measures to improve the RONW. Explain the importance of business tracking system chart in decision making process and its utility to the managers.

Assignment:

- Work out the RONW for the Nagarjuna Agrichem Limited for the year 2008-09.
- Assuming changes in the financial information by a certain percentage calculate RONW.
- Study the implications on the business performance and future earnings on sales, assets, net worth and outside funds.

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Exercise No: 07 Date: _____

COMPOUNDING AND DISCOUNTING TECHNIQUES

These are capital budgeting or investment analysis. Investment in agriculture is of two types.

- Operating Investment like seeds, fertilizers, feeds etc.,
- Capital assets like land, machines, projects, godowns etc.,

Investment of operating inputs occur with in one production cycle of a year or some times less than one year, but investment on capital assets is seen over a longer period. In the profit maximization principle *time element* is not brought in to consideration because both expenses and returns are assessed to fall in same cycle. But in capital investment, the expenditure and return will spread over longer time. In order to assess the returns from the investments, available alternatives must be weighed for different lengths of time in respect of cost and returns i.e. recognizing the time vale of money, profitability and economic viability of capital investment is of greater importance to the agribusiness enterprises.

A rupee invested today is worth more than one rupee in future. This is primarily due to opportunity cost i.e. interest to be added to the principle and hence its value increases. So determining the future value of the present investment is one of the important concepts in financial analysis of agribusiness projects. This is called compounding technique. In this process the interest is added to principle amount at the end of each time period, which in turn earns interest. Hence, Compounding is the process of finding the future value of the present amount. In contrast, discounting is the process of measuring the present worth (PW) of future amount. The following are the relevant formulae:

COMPOUNDING: Compounding is the process of finding the future value (FV) of the present amount (P). The compounding formula is used to find out FV of Rupee one for n^{th} year at interest, i

$$FV = P (I+i)^n \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

The (1) is used to calculate future value (FV) of the initial present amount of Rs. (P), given the n periods of time and the interest rate, i.

- For example, calculate FV of the amount if P = Rs.3000

i = 12.5% and n = 4.3 years

$$FV = Rs.3000(1+0.125)^{4.3}$$

$$Rs.3000(1.759)$$

$$Rs.4978.25$$

i.e. the present sum or amount, (P) of Rs.3000 will become Rs.4978.25 after 4.3 years at the interest rate of I = 12.5% per annum.

Annuity factor: By definition annuity means streams of payment or return over time. The compounding factor (CF) for rupee one per annum is worked out as

$$CF = \frac{(I+i)^n - I}{i} \times A \quad \ldots\ldots\ldots\ldots \quad (2)$$

The equation (2) is used to calculate the future accumulated value (FV) at the end of nth period at the interest rat of i. Suppose if a sequence of equal amount of installment (A) is made every year, then what is future accumulated value (FV) after n periods at i, interest rate

Let us assume that A = Rs.1500; i = 11%; n = 3.2 years, then what is FV?

$$FV = \frac{(1+0.11)^{3.2} - 1}{0.11} \times 1500 = \frac{0.396}{0.110} \times 1500 = Rs.5406.49$$

i.e. The annual installment of Rs. 1500 for 3.2 years period will become Rs. 5406.49 if it will grow at 11% interest per annum.

SINKING FUND FACTOR :

This is used to calculate the amount of each equal payment (A) to be made at the end of each t^{th} period to accumulate to a given future amount of Rs. (F) at the end of the n^{th} period at the specified rate of interest, i. The relevant formula here is

$$A = F \times \frac{i}{[1+i]^n - 1} \quad \ldots\ldots\ldots\ldots (3)$$

Where, A = Annual investment to be made; F = Total future amount to be realized.

- Suppose if n = 12 years, i = 14% per annum; F = Rs.8 lakhs, then what is the payment to be made at each t^{th} year (A) = ?; Here t = 12 years

$$A = 800000 \times \frac{0.14}{(1.14)^{12} - 1} = \text{Rs. Rs.29,335.46}$$

Every year, one has to pay Rs.29,335.46 to clear the future value of Rs.8 lakh.

We should note that sinking find factor is the reciprocal of the compounding factor for rupee one per year.

DISCOUNTING: It is the method of determining present value of the future money. This is the current value of investment to be received in the future. This is worked out through discounting process. Future sum is discounted back to find out its present value. Discounting is the reverse process of compounding. A present sum is compounded to know the future value where as future sum is discounted to know the present value.

This factor is expressed as $1/(1+i)^n$

It is used to calculate the present worth (PW) or present value of future sum (F) at the end of n^{th} period at the interest rate of i. The formula is

$$PW \text{ or } DF = F \times \frac{1}{(1+i)^n} \quad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

- Suppose if the future amount (F) that will be received after lapse of 10 year with 13% interest rate is Rs.15, 000, then what is its present worth?

Here n = 10years, i = 0.13 & F = Rs.15000

$$PW \text{ or } DF = 15000 \times \frac{1}{(1+0.13)^{10}} = 15000\ (0.2946) = Rs.\ 4419.$$

i.e. to receive the future amount of Rs.15,000 after lapse of 10 years with 13% interest rate one has to invest a worth equal to Rs. 4419.

Present Worth of Annuity Factor (PWAF) :

This is a stream of constant payment. This is used to calculate the present worth (PW) of sequence of level payments (here the amount of each equal payment is A) to be made at the end of 'n' years at the interest rate, i. The formula is expressed as

$$PWAF = A \times \frac{(1+i)^n-1}{i(1+i)^n} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

where, A= Equal Annual installment;

- Let us assume that A= Rs. 2000, i=13% and n=10 years

$$PWAF = 2000 \times \frac{(1+0.13)^{10}-1}{(0.13)(1+0.13)^{10}} = 2000 \times \frac{3.3946-1}{(0.13)(3.3946)} = 2000 \times \frac{2.3946}{0.4413}$$

= 2000 (5.4262) = Rs. 10852.40.

So, at the end of 10 years a sequence annual payment of Rs 2000 will become Rs. 10852.40 if considered an interest of 10% per annum.

This discounting annuity factor is used to calculate present worth of annuity factor for *cash flow stream of the project* for certain years.

- For example, the present worth of annuity factor for 10 years at 12%% is 5.650 …….. (6)
- Similarly, the present worth of annuity factor for 50 years at 12% is 8.304 …….. (7)

(These are obtained from present worth of annuity factor table)

Subtracting the former from the latter we get present worth of annuity factor for 11thyear through 50th year of the hypothetical project = 8.304 – 5.650 = 2.654. This annuity factor is multiplied by annual cash flow of the project, (for example, assume it as Rs.1.2183 crore) to get the present worth of cash flow of the project. Hence, the present worth of agricultural project from 11th year to 50th year of the project with annual cash flow of Rs.1.2183 crore is 2.654 x 1.2183 = Rs.3.2334 crore.

Capital Recovery Factor (CRF) :

This is annual equal repayments to be made to cover the borrowed investment during project period. This factor is used to calculate the amount of equal payment (A) annually to be paid during the time period (t=I to n years) to recover the present amount (P) during the time period at interest rate, i. The formula for the factor is

$$A = P \times \frac{i(1+i)^n}{(1+i)^n-1} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

Where, A= Annual repayment amount, P= Borrowed fund;

- Let us assume that i = 13.5%, P = Rs.500000 (i.e., amount of loan taken) and n = 10 years then what is the CRF i.e. value of A.

$$A = 500000 \times \frac{0.135(1+0.135)^{10}}{(1+0.135)^{10}-1} = 500000 \times \frac{0.135\ (3.5478)}{(3.5478-1)} = \text{Rs. } 94002.67$$

Hence, every year one has to pay Rs.94,002.67 for 10 years to pay for Rs.5 lakh at the interest rate of 13.5%.

Class room exercise:

1. Calculate the future value for the present investment of Rs. 3500 at 12.5% interest rate for 12.8 years.
2. Calculate the future value annuity factor for an annual installment of Rs. 1350 for 6.5 years at 11.8% interest rate.
3. Calculate the sinking fund factor or equal annual payment to be made for future amount of Rs. 6900 at an interest rate of 13.8% for 12 years.
4. Compute the discounting factor ie. PW / DF of money of Rs. 38500 for 11 years at 12.5% interest rate per annum.
5. Calculate the PWAF for an annual installment of Rs. 1750 at 13% interest rate on 11 years.
6. Compute the capital recovery factor for a loan amount of Rs. 720000 at an interest rate of 12.5% for 13 years.

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Exercise No: 08 Date: _____

PROJECT APPRAISAL TECHNIQUES - I

We, in our future transactions of goods and services make payments and receive the amounts at future dates. A person who deposits money in the bank receives the said amount after some specified date at agrees interest rate. The insurer pays the premium at specified regular intervals of time and receives the assumed sum in case of contingencies, accidents and so on. High paid professionals, expatriates, athletes, cine actors, managers offer their services for specified period of time on a given contract of salary and perks. In all such cases, we notice the concepts of time value of money and this forms the basis for formulating sound financial decisions.

Let us consider the decision problems like whether to have Rs.1000 immediately or have it after a lapse of 3 years from now. Certainly the people prefer to have the money now, rather than having it at a future date. This is due to the fact that the people's wants must be fulfilled now by having the desired goods and services. Another point to be worthy of mention here is that the value of the money over time falls and this trend continuous with time particularly during inflation periods. This means the rupee value in different time periods as such is not comparable without economic indices. To make sound and long term decisions, we require the money flows or payments at different time periods be reduced or standardized to common denominate, so that these flows can be compared. Future values of present sums and annuities should be worked out to help us in our financial decision problems.

Investment analysis is also called capital budgeting. The profitability of alternative agricultural projects is determined through this technique. Four components are required for this analysis viz., net cash revenue from different projects, their costs, terminal or salvage value and discount rate to be used. The cash receipts minus cash expenses are the net cash revenue. The cost of investment is actual total expenditure for its implementation. The terminal value of the project is equal to depreciation value of the project and for simplicity junk value is assumed to be zero. The land values of the project should be estimated at its market value. Discount rate is opportunity cost of capital which represents the minimum rate of return for justifying the investment. If the proposed investment in the project fails to earn this minimum rate of interest, then capital should not be invested in the said project and alternative projects must be searched. If the capital is to be borrowed then the discount rate chosen should be higher than cost of borrowed capital.

Broadly there are two methods of project appraisal or analysis or evaluation namely undiscounted and discounted techniques.

UNDISCOUNTED CASH FLOW MEASURES OF PROJECT APPRISAL:

Undiscounted measures are primitive, which often mislead in ranking of the project leads to wrong choices. Two important measures under this are 1. Pay back period and 2. Rate of Return Method.

Pay Back Period (PBP):

The length of time required to get back the total investment made on the project is called Pay Back Period. When two projects have same rate of return and the same amount of risk, the decision may be taken on the basis of PDP.
This is estimated by using a straight forward formula:

P= I / E Where, P = Pay back period
I = Investment made on the project in Rs.
E= Annual net cash revenue in Rs.

Decision rules of PBP:

1. Give highest ranking to the business investment / project which has shorter PBP, and follow ranking in descending order of PBP.
2. Give lowest ranking to the business investment which has longer PBP.
3. Generally the business investment / project with minimum or shorter PBP i.e. highest rank are accepted first for investment.

Limitation of PBP: It is inadequate to exercise the option among the alternatives, because it fails to consider very important points like consistency of running, timing of the proceeds, returns after the payback period and whether the cash-flows would be positive or negative in future.

Class room exercise:

Calculate the pay back period of the following two projects and conclude your result. The initial investment in each project is Rs. 20,000/-

Year	Cash flows	
	Project - A	Project - B
1	5,000	4,000
2	5,000	4,000
3	5,000	4,000
4	5,000	4,000
5	5,000	4,000
6	5,000	4,000

Project A = Project B =

Conclusion:

Rate of Return Method (ROR) or Rate On Investment Method (ROI):

ROR method expresses the profits generated by the investment as a percentage of the investment. In other words it is the return per rupee of investment or ratio of earnings to investment. Its helps to know the profitability of an investment in the business or generation of returns per rupee of investment and to estimate the profits as percentage of investment.

Procedure:

Step 1: Estimate the average investment which is equal to half of the original investment. Original investment can also be used.

Step 2: Estimate the average annual net earnings over the life of the investment.

Step 3: Calculate the average rate of return by dividing the average annual net earnings or net profit by average investment.

$$ROR = \frac{\text{Net Profit}}{\text{Original investment}} \times 100 \quad (or) \quad \frac{\text{Average annual profit}}{\text{Average investment}} \times 100$$

Step 4: Average annual return per rupee of investment

a. *Divide the total returns by the number of years of investment to arrive at the average return per year.*
b. *Divide average return per year with original investment.*

$$ROR = \frac{\text{Average annual net profit}}{\text{Original investment}} \times 100$$

Step 5: Apply the decision rule as follows:

a. *Give highest rank to the investment in such a project / business whose ROR is highest.*
b. *Select the business / project whose investment yields highest ROR or having highest ranking.*

DISCOUNTED MEASURES OF PROJECT APPRISAL:

Cash flows are the yearly net benefits accrued from the project. If they are weighed or calculated by discount rate they become discounted cash flows. These discounted cash flows are the best estimates to decide on the worth of the projects. From the actual stream of gross benefits the capital invested plus other working costs are deducted to get the net present value. From that residual the return of capital as well as return to capital are computed. The residual is called the cash flow of the project.

The various discounted measures of project analysis are Net Present Value (NPV), Benefit Cost Ratio (BCR), Internal Rate of Returns (IRR), N / K Ratio, Profitability Index etc.,
Let us know how these terms are computed.

NET PRESENT VALUE (NPV) :

It is also called Net Present Worth (NPW) of the cash flows of project at a particular time period. The cash flow is actually the difference between cash inflows and cash outflows. The investment made in the agricultural projects is treated as cost of the project or simply it is cash outflows of the project. The various returns obtained from projects at different time periods is termed as cash inflows or gross benefits of the projects. If the cash flows are discounted with appropriate discount rate over the life span of the project, then it is called Net Present Worth (NPW) of the project. The selection criterion of the project depends upon positive value of NPV when discounted at the opportunity cost of capital. NPV is an absolute measure, not a relative measure.

Algebraically, it is worked out as

$$\text{NPV or NPW} = \left[\frac{P_1}{(1+i)^{t1}} + \frac{P_2}{(1+i)^{t2}} + ,,,,,,,, + \frac{P_n}{(1+i)^{tn}} - C_t \right]$$

P_1 = Net cash flow in the first year;
t = time period;
C = initial cost of investment and
i = discount rate.

$$\text{So, NPV or NPW} = \sum_{t=1}^{n} \frac{B_t - C_t}{(1+i)^t}$$

B_t = Cash inflows in rupees in t^{th} year
C_t = Cash outflows in rupees in t^{th} year
S is the sigma and it stands for total summation of cash flows over life span of the project i.e., t = 1 to n years

Utility of NPW:

1. *To determine the true profitability of investment*
2. *It helps in ranking the alternative business investment proposals.*
3. *To choose among mutually exclusive projects that will maximize the benefits to investors.*

Procedure of computing the NPV:

Step 1: Forecast the cash outflows in the business.

Step 2: Forecast the cash-inflows from the investment.

Step 3: Estimate the net cash inflows by subtracting cash inflows from outflows.

Step 4: Identify the appropriate discount rate i.e. generally the opportunity cost of capital or required rate expected on investment.

Step 5: Work out the discount factors as the expected life period of the project.

Step 6: Calculate the net present value of the net cash flows (NPW) by multiplying the net cash flows with discount factors.

Step 7: Estimate the sum of the NPW for the life period of investment.

Step 8: Apply the decision rule:

a. Accept the investment in the business if NPW is positive or > 0
b. Reject the investment in the business if NPW is negative or < 0
c. If NPW = 0, (cash inflows = cash outflows) that means the cost of the investment has been fully recovered at the rate of discounting or the investment generates cash flows at a rate just equal to the opportunity cost of capital.
d. In case of selection from a number of alternative investment proposals, the project would be arranged in descending order of their NPV's and give ranks i.e. first rank is given to the project with highest positive NPV and so on.
e. Select such projects or investment proposals with highest NPV's.

Exercise:

- Estimate the NPW for the two following agribusiness enterprises and conclude the result.

1. Sericulture Project:

Year	Cost in Rs.	Returns in Rs.	Net income in Rs.	Discount factor @ 12%	NPW
1	38900	-		$1/(1+0.12)^1 = 0.8928$	
2	9239	28475		$1/(1+0.12)^2 =$	
3	10575	32550		$1/(1+0.12)^3 =$	
4	11953	35610		$1/(1+0.12)^4 =$	
5	12858	39802		$1/(1+0.12)^5 =$	
Total NPW					

2. Mango Project:

Year	Cost in Rs.	Returns in Rs.	Net income in Rs.	Discount factor @ 12%	NPW
End of 6th year	25000	-		$1/(1+0.12)^6 = 0.5066$	
End of 7th year	4250	10260		$1/(1+0.12)^7 =$	
End of 8th year	4792	12550		$1/(1+0.12)^8 =$	
End of 9th year	5368	14530		$1/(1+0.12)^9 =$	
End of 10th year	5975	16257		$1/(1+0.12)^{10} =$	
End of 11th year	6456	19396		$1/(1+0.12)^{11} =$	
End of 12th year	7187	21470		$1/(1+0.12)^{12} =$	
Total NPW					

Practice problems:

1. Work out the NPW of the following agribusiness enterprise. ***(1 unit = 1 crore).***
The discount rate is 10%.

Year	Incremental project costs			Incremental project benefits
	Capital expenditure in Rs.	Operating & maintenance cost in Rs.	Production costs in Rs.	
1	2.84	0	0	0
2	10.25	0	0	0
3	11.46	0	0	0
4	8.37	0	0	0
5	4.21	0	0	0
6	2.09	0	0	0
7	0	1.28	0.86	6.44
8	0	1.28	1.23	12.32
9	0	1.28	2.47	16.74
10	0	1.28	1.63	15.45
11 to 40	0	1.28	1.63	15.87

2. Find out the ***NPW*** with 11.50% discount rate for the following two projects and suggest the better and feasible project with proper conclusions.

Vermi-compost project			Jatropa Bio-diesel project		
Year	Costs(Rs.)	Returns(Rs.)	Year	Costs (Rs.)	Returns (Rs.)
1	18,500	-	End of 5th year	35,800	-
2	6,300	16,500	End of 6th year	4,600	12,800
3	7,400	20,600	End of 7th year	4,800	14,300
4	8,000	22,000	End of 8th year	5,150	15,800
5	8,300	23,800	End of 9th year	5,250	17,100
6	8,450	25,100	End of 10th year	5,750	18,600
7	8,100	25,850	End of 11th year	6,250	19,800

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Exercise No: 09 Date: _____

PROJECT APPRAISAL TECHNIQUES - II

BENEFIT COST RATIO (BCR)

It is one of the discounted measures that are used to assess the credit-worthiness of the project. Here we compare the present worth of costs with present worth of benefits. This ratio is obtained by dividing the sum of the present worth of benefit stream of the project with sum of the present worth of cost stream. The mathematical formula for working out this ratio is given as

$$BCR = \frac{\sum_{t=1}^{n} \frac{B_t}{(1+i)^t}}{\sum_{t=1}^{n} \frac{C_t}{(1+i)^t}} = \frac{\text{Sum of the present value of benefits}}{\text{Sum of the present value of costs}}$$

Where

B_t = the benefit stream i.e., benefit of the project in question in t^{th} year
C_t = the cost stream i.e., cost of the project in question in t^{th} year
t = 1 to t years i.e., life span of the project
i = the interest rate or discount rate at which funds are borrowed.

Utility of BCR:

1. *Helps in selection of investment opportunities.*
2. *Ranking the project for implementation among various alternatives.*

This ratio depends on the discount rate used. At higher 'i' value, the B-C ratio will be lesser. This ratio is more popularly used in resource projects and private investment projects. Generally, opportunity cost of capital is used to discount the benefits and costs of the projects.

With a very little manipulation take the reciprocal of B-C ratio and subtract this from one. By doing so, we will come to know by what percentage the benefits could fall (B_{pf}), if B-C ratio is driven down to 1 from its present level, say 1.784.

B_{pf} = 1-(1÷ B C Ratio) x 100

= 1- 1÷ 1.784) x 100

= 43.95%

So, in our example, if B-C ratio is driven to 1 from its value of 1.784, then benefits of the project would fall nearly by 44 per cent.

Procedure of computing the BCR:

Step 1: Estimate the cash outflows for the period of investment.

Step 2: Estimate the cash-inflows over the life period of the business.

Step 3: Identify the discount rate at which the costs and benefits are to be discounted.

Step 4: Work out the discount factors as the expected life period of the project.

Step 5: Calculate the net present value of the costs by multiplying the costs of each year with the respective discount factors

Step 6: Calculate the net present value of the benefits by multiplying the benefits of each year with the respective discount factors

Step 7: Estimate the BCR by using the given formula.

Step 8: Apply the decision rule:

a) If benefit-cost ratio (BCR) of the project is more than one, then the investment in the project is credit worthy and hence the proposed agricultural project can be accepted for implementation. Similar decisions can be mad even for deciding investments in different alternative agribusinesses.

b) It is better to work out BCR for alternative projects or business investment activities which are suitable to the given resources and environment and then select the project with the highest BCR among the alternatives for implementation.

c) Projects with BCR less then one should be dropped because they are unworthy projects.

d) If BCR = 1, (cash inflows = cash outflows) that means the cost of the investment has been fully recovered at the rate of discounting or the investment generates cash flows at a rate just equal to the opportunity cost of capital.

e) It is better to rank all the suitable alternative projects based on their magnitudes of BCR. The first rank should be allotted to the project with the highest BCR.

Class room exercise:

- Estimate the BCR for the following two agribusiness enterprises and conclude the result.

Sericulture Project:

Year	Cost in Rs.	Returns in Rs.	Discount factor @ 12%	Present worth of costs in Rs.	Present worth of benefits in Rs.
1	38900	-	$1/(1+0.12)^1 = 0.8928$		
2	9239	28475	$1/(1+0.12)^2 =$		
3	10575	32550	$1/(1+0.12)^3 =$		
4	11953	35610	$1/(1+0.12)^4 =$		
5	12858	39802	$1/(1+0.12)^5 =$		
Total NPW					

Mango Project:

Year	Cost in Rs.	Returns in Rs.	Discount factor @ 12%	Present worth of costs in Rs.	Present worth of benefits in Rs.
End of 6th year	25000	-	$1/(1+0.12)^6 = 0.5066$		
End of 7th year	4250	10260	$1/(1+0.12)^7 =$		
End of 8th year	4792	12550	$1/(1+0.12)^8 =$		
End of 9th year	5368	14530	$1/(1+0.12)^9 =$		
End of 10th year	5975	16257	$1/(1+0.12)^{10} =$		
End of 11th year	6456	19396	$1/(1+0.12)^{11} =$		
End of 12th year	7187	21470	$1/(1+0.12)^{12} =$		
Total NPW					

Practice problems:

1. Work out the BCR of the following agribusiness enterprise.
(1 unit = 1 crore). The discount rate is 12.50%.

Year	Incremental project costs			Incremental project benefits
	Capital expenditure in Rs.	Operating & maintenance cost in Rs.	Production costs in Rs.	
1	2.84	0	0	0
2	10.25	0	0	0
3	11.46	0	0	0
4	8.37	0	0	0
5	4.21	0	0	0
6	2.09	0	0	0
7	0	1.28	0.86	6.44
8	0	1.28	1.23	12.32
9	0	1.28	2.47	16.74
10	0	1.28	1.63	15.45
11 to 40	0	1.28	1.63	15.87

2. Find out the BCR with 11.50% discount rate for the following two projects and suggest the better and feasible project with proper conclusions.

Vermi-compost project			Jatropa Bio-diesel project		
Year	Costs(Rs.)	Returns(Rs.)	Year	Costs (Rs.)	Returns (Rs.)
1	18,500	-	End of 5th year	35,800	-
2	6,300	16,500	End of 6th year	4,600	12,800
3	7,400	20,600	End of 7th year	4,800	14,300
4	8,000	22,000	End of 8th year	5,150	15,800
5	8,300	23,800	End of 9th year	5,250	17,100
6	8,450	25,100	End of 10th year	5,750	18,600
7	8,100	25,850	End of 11th year	6,250	19,800

INTERNAL RATE OF RETURNS (IRR)

Internal Rate of Returns (IRR) is the discount rate which equates the present value of investment cash inflows and cash outflows i.e. Net Present Worth is equal to zero and the Benefit Cost Ratio of project is equal to 1. In computation if IRR, time value of money is accounted. Method of working IRR provides knowledge of actual rate of interest from different project. So, known as marginal efficiency of capital or yield on investment. It is the discount rate which must be found out with trial and error with some approximation. Here an arbitrary discount rate is assumed and its corresponding NPW is arrived. The positive NPW value indicates that IRR is still higher and next assumed arbitrary IRR value must be comparatively higher than the initial level. This process continues until NPW becomes negative.

It is the rate of return per rupee invested in agril. Projects obtained over the life span of the projects for example, if IRR of an irrigation project is 33%, it means the project would give an average annual return of Rs33 per Rs.100 invested in irrigation project. This means at this IRR rate, the net present value of cash flow of the project (NPV) over its life span becomes zero.

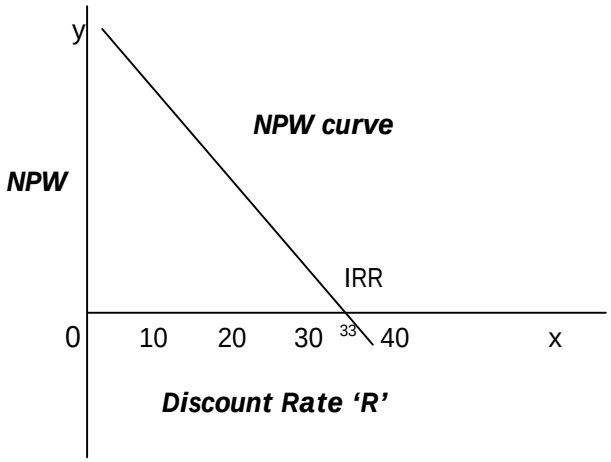
Algebraically the IRR of the projects is worked out as

$$IRR = \sum_{t=0}^{T} \frac{P_t}{(1+R)^t} = 0 \quad \text{i.e.} \quad NPW = 0$$

Where P_t = cash flows of the project in t^{th} year.

By trying the different discount rates commending from the rate of cost of credit (i.e., 10%, 11% etc) for R, we can obtain the IRR level at which the NPV becomes zero. Here, P is cash flow of the project in t^{th} year. These are also known as net benefits of the project computed over life span (T years) of the project. R is the discount rate which is varied. Further, t = 0 to T years, is the life span of the project in question. *There is inverse relationship between NVP and discount rates (R)*. The level of NPV of cash flows decreases with increased value of R and at a particular level of R, the NPV becomes zero as shown in the figure.

Figure: Graph showing the various levels of NPW corresponding to the discount rates.



In the above figure, at 33% of R, the NPV of cash flow of the project is zero. Hence IRR of project is 33%.

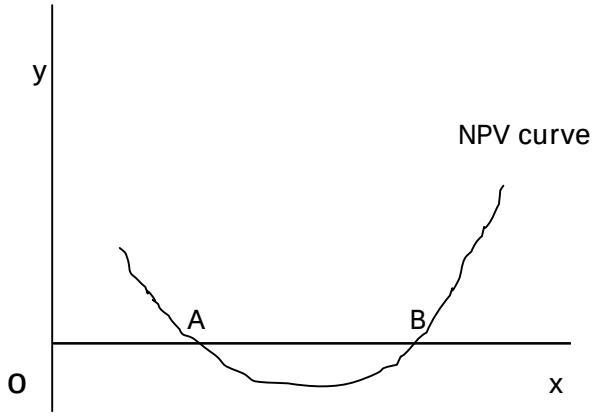
The cost of credit (C) is the interest rate at which the project credit is borrowed. But in projects it is actually the social rate of discount (SRD). For project with long duration this discount rate is generally less than 10%. The decision rule corresponding to IRR is, "Accept the project, if IRR is greater than cost of capital, (IRR > C)".

But in general, when

If NPV > 0, then IRR > C
If NPV = 0, then IRR = C
If NPV < 0, then IRR < C

IRR, being a pure number is more useful in allowing projects of different sized to be compared directly. If the project is having multiple IRRs, such as drainage project, etc., then how to select the particular IRR which gives the true picture of the project. Let us see the figure below.

Figure. Selection of 'R' in case of multiple IRR.



At points A & B, the NPV curve is cutting the x axis. At point A, it is cutting the x axis from above but at point b, it is cutting from below. Under such situations the true IRR lies at point A.

The formula for interpolating the value of IRR lying between the two discount rates (too high and too low) is given as

$$\text{IRR} = \left[\text{Lower Discount Rate}\right] + \left[\text{Difference between two discount Rates}\right] \times \left[\frac{\text{Present worth of the incremental net benefit stream at lower discount rate}}{\text{Sum total of present worth of incremental net benefit streams at both the discount rates}}\right]$$

Utility of IRR computation:

1. *Useful in identifying the discount rate by giving time adjusted value consideration.*
2. *To identify and select the rate of return which equates the present worth of cash inflows and outflows of an investment.*

3. *To know the average earning power of money used in the business.*
4. *To know the marginal efficiency of capital investment.*
5. *To select the business investment opportunities from alternative opportunities having rate of return greater than the opportunity cost.*

Procedure of computation of IRR:

Step 1: Estimate the total cost of investment each year.

Step 2: Estimate the total benefits from the business investment each year.

Step 3: Calculate the net benefits by deducting the costs from benefits of each year.

Step 4: Select a lower discount rate and a higher discount rate for discounting the net benefits.

Step 5: Identify the discount factors for each year at the lower and higher discount rates for the investment period.

Step 6: Calculate the present values at lower and higher discount rates separately by multiplying the year-wise net benefits with respective discount factors.

Step 7: Estimate the total of net present values at the two discount rates.

Step 8: Calculate the IRR using the above mentioned formula.

Step 9: Ally the decision rule to accept or reject the investment proposal in the business.

Decision Rule:

1. *Accept the investment opportunity if IRR is greater than the market rate of interest or the opportunity cost of capital.*
2. *Reject the investment opportunity if IRR is less than the market rate of interest or the opportunity cost of capital.*
3. *When more than one investment opportunities are involved in the selection process:*
    a. *Arrange the investment opportunities in descending order of the value of IRR.*
    b. *Choose that set of opportunities for which IRR is greater than or equal to the market rate of interest, depending on the availability of funds.*

Class Room Exercise:

☛ Estimate the IRR for the following two agribusiness projects and conclude the result.

Sericulture Project:

Year	Cost in Rs.	Returns in Rs.	Net income in Rs.	Discount factor @ 40%	NPW	Discount factor @ 43%	NPW
1	38900	-		$1/(1+0.40)^1$ = 0.7142		$1/(1+0.43)^1$ = 0.6993	
2	9239	28475					
3	10575	32550					
4	11953	35610					
5	12858	39802					
Total NPW						-	

Mango Project:

Year	Cost in Rs.	Returns in Rs.	Net income in Rs.	Discount factor @ 25%	NPW	Discount factor @ 30%	NPW
End of 6th year	25000	-		$1/(1+0.25)^6$ =		$1/(1+0.30)^6$ =	
End of 7th year	4250	10260					
End of 8th year	4792	12550					
End of 9th year	5368	14530					
End of 10th year	5975	16257					
End of 11th year	6456	19396					
End of 12th year	7187	21470					
Total NPW						-	

Practice problems:

1. Work out the IRR for the following agribusiness enterprise. *(1 unit = 1 crore). The lower discount rate is 14.35% and the higher discount rate is 18.25%.*

Year	Incremental project costs			Incremental project benefits
	Capital expenditure in Rs.	Operating & maintenance cost in Rs.	Production costs in Rs.	
1	2.84	0	0	0
2	10.25	0	0	0
3	11.46	0	0	0
4	8.37	0	0	0
5	4.21	0	0	0
6	2.09	0	0	0
7	0	1.28	0.86	6.44
8	0	1.28	1.23	12.32
9	0	1.28	2.47	16.74
10	0	1.28	1.63	15.45
11 to 40	0	1.28	1.63	15.87

2. Find out the IRR (Internal Rate of Returns) for the following two projects and suggest the better feasible project.

Vermicompost Project			Jatropa Bio-Diesel Project		
Year	Costs (Rs.)	Returns (Rs.)	Year	Costs (Rs)	Returns (Rs.)
1st Year	38,900	Nil	End of 6th Year	25,000	Nil
2nd Year	9,239	28,475	End of 7th Year	4,250	10,260
3rd Year	10,575	32,550	End of 8th Year	4,792	12,550
4th Year	11,952	35,610	End of 9th Year	5,368	14,530
5th Year	12,858	39,802	End of 10th Year	5,975	16,275
			End of 11th Year	6,456	19,396
			End of 12th Year	7,187	21,470
Discount Rates are 39.50 % and 43.75 % per annum			***Discount Rates are 26.25 % and 29.75 % per annum***		

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Exercise No: 12 Date: _____

PROJECT APPRAISAL TECHNIQUES - III

NET BENEFIT-INVESTMENT RATIO (N/K RATIO)

This is one of the four discounted techniques used for selecting the projects among alternative projects. The selection criterion that is provided by NPW is that the project which is having higher NPW than that of its alternative project should be given preference for acceptance. Similarly, the project having higher B-C ratio (greater than 1) is selected among alternative projects. The same selection criterion holds good in using IRR to determine the order by which the projects should be implemented. The policy and decision makers often required the ranking of projects using these selection criteria, because capital budgets will not be sufficient to take all the projects at a time. If projects are ranked based on these measures, then they can be chosen based on priority need of the economy and suitability of areas to the projects.

The suitable and more convenient selection criterion for projects is net benefit investment ratio. It is also called simply N/K ratio. This is obtained by simply dividing the present worth of positive net incremental benefits (these are also known as cash flows of the project by the present worth of negative net incremental benefits. This is given as

$$\text{N/K ratio} = \frac{\text{The present worth of the sum of positive net incremental benefits}}{\text{The present worth of the sum of the negative net incremental benefits}}$$

An incremental net benefit stream usually will be negative during the first few of years of the project. The capital expenditure is incurred to construct the project during this gestation period (i.e., this gestation period starts from initial year to the year in which returns from the project are obtained).

The selection criterion that emanates from this ratio is that the project is accepted, if its N/K ratio is greater than one. But we should remember that the discount rate used should be realistic and generally it is the interest rate at which the funds of the projects are borrowed. This N/K ratio maximizes the return per unit of investments made in independent projects.

The cost level if N/K is equal to 1 :

Further implications can be drawn from the N/K ratio. Suppose if N/K is made equal to 1, then what additional percent of costs are required. This is revealed from the following equation.

$$C_{pr} = \frac{(a-b)}{b} \times 100$$

Where,

C_{pr} = percentage rise in the investment costs if N/K is made equal to 1

a = sum of the present worth of positive net incremental benefit

b = sum of the present worth of negative net incremental benefit

For worked out example, this is

$$C_{pr} = \frac{(66.839 - 29.165)}{29.165} \times 100 = 129.18\%$$

Similarly, the percentage fall in the net incremental benefits (i.e., B) is worked out using the equation

$$B_{pf} = 1 - (1 - N/K \text{ ratio}) \times 100$$

$$= 1 - (1 - 2.292) \times 100 = 56.37\%$$

This means the net incremental benefits would fall by 56.37 per cent, if N/K ratio is made equal to 1.

SWITCHING VALUE :

It is the value at which the elements of a project will have to reach due to changes in an unfavorable direction of the project, before the said project no longer meets acceptable project worth criterion. It is the process of assuming changes in project costs and benefits and then measuring the impact of such changes, i.e., (sensitivity analysis) on project worth selection criteria viz., B-C ratio, NPW, IRR, N/K ratio, etc. In sensitivity analysis we assume such changes in an important element of the project and then assess or find out the impact of such changes on project worth criteria. On the other hand, in switching value method, we first assume as to how much percentage variation is dropped in benefits or percentage increase in costs of the projects before the project would no longer meet the minimum level of acceptability.

Here we first assume certain percentage drop in the net incremental benefit stream of the project and work out the present worth. If it is positive, a higher percentage of short falling net incremental benefit is assumed such that present worth becomes negative at the opportunity cost of capital. We use the same interpretation method for computing the IRR and find out the switching value percentage so that NPW becomes zero at the opportunity cost of capital, i.e., discount rate.

$$\text{Switching value} = \left[\begin{array}{l}\text{Lower short}\\ \text{Fall \% + Difference}\\ \text{between the high}\\ \text{And lower discount}\\ \text{Rates}\end{array}\right] \times \left[\begin{array}{c}\text{PW at lower}\\ \text{shortfall \%}\\ \hline \text{PW of higher \% shortfall +}\\ \text{PW of lower \% shortfall}\end{array}\right]$$

Switching value technique is illustrated in the following table for hypothetical agro-enterprise. Here, if the benefits are decreased by nearly 44%, then NPW of that agro-enterprise would become zero at 10 per cent discount rate.

PROFITABILITY INDEX (PI):

Here we relate the NPV of the cash flows of the project to the total capital required (Cr) for the project through Profitability Index. It is defined as the ratio of net present values of the cash flows to the initial capital expenditure (Co). Assuming that all the capital expenditure is incurred in year zero, the Profitability Index (PI) is as follows:

$$PI = \frac{NPV}{Co} = \frac{1}{Co}\sum_{1=0}^{n}\frac{Cr}{(1+i)^n} = \frac{\text{Net present value of the cash flows}}{\text{Original amount invested}}$$

Illustration of PI:

- Estimate the PI if the original amount invested in a project is Rs. 60,000/-

Year	Cash flow in Rs.	Discount factor @ 12% per annum	NPV in Rs.
1	14500		
2	14900		
3	16600		
4	18700		
5	19000		
6	20000		

$$PI = \frac{\text{Net present value of the cash flows}}{\text{Original amount invested}} = \frac{}{60{,}000} =$$

Class room exercise:

1. Work out the N / K Ratio ofr the following agribusiness enterprise.
(1 unit = 1 crore). The discount rate is 12.50%.

Year	Incremental project costs			Incremental project benefits
	Capital expenditure in Rs.	Operating & maintenance cost in Rs.	Production costs in Rs.	
1	2.84	0	0	0
2	10.25	0	0	0
3	11.46	0	0	0
4	8.37	0	0	0
5	4.21	0	0	0
6	2.09	0	0	0
7	0	1.28	0.86	6.44
8	0	1.28	1.23	12.32
9	0	1.28	2.47	16.74
10	0	1.28	1.63	15.45
11 to 40	0	1.28	1.63	15.87

2. Find out the N/ K Ratios for the following two projects and suggest the better one for implementation.

Sericulture Project			Mango Project		
Year	Costs (Rs.)	Returns (Rs.)	Year	Costs (Rs)	Returns (Rs.)
1st Year	41,300	Nil	End of 6th Year	32,300	Nil
2nd Year	10,987	18,900	End of 7th Year	4,752	10,654
3rd Year	11,566	16,115	End of 8th Year	5,100	15,363
4th Year	12,890	13,585	End of 9th Year	5,950	26,750
5th Year	9,600	10,505	End of 10th Year	6,400	30,600
			End of 11th Year	7,101	23,789
Discount Rate is 13.25% per annum			End of 12th Year	7,135	20,999
			Discount Rate is 12.75% per annum		

3. Work out the switching values for the following agribusiness enterprise.(***1 unit = 1 crore). Consider the lower short fall of the benefits as 30% and higher short fall as 45%. The discount rate is 11%.***

Year	Incremental project costs			Incremental project benefits	Total costs	DF at 11%	30 % shortfall of benefits			45 % shortfall of benefits		
	Capital expenditure in Rs.	Operating & maintenance cost in Rs.	Production costs in Rs.				Reduced benefits	Net incremental benefits	NPW at 11% DF	Reduced benefits	Net incremental benefits	NPW at 11% DF
1	2.84	0	0	0								
2	10.25	0	0	0								
3	11.46	0	0	0								
4	8.37	0	0	0								
5	4.21	0	0	0								
6	2.09	0	0	0								
7	0	1.28	0.86	6.44								
8	0	1.28	1.23	12.32								
9	0	1.28	2.47	16.74								
10	0	1.28	1.63	15.45								
11 to 40	0	1.28	1.63	15.87								

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Exercise No: 11 & 12 Date(s): _____ & _____

VISIT & STUDY OF PROFILE OF AGROBASED INDUSTRIES
(UNDERSTANDING THE AGRIBUSINESS ENVIRONMENT)

CASE STUDIES 1 & 2

The understanding of agribusiness environment is essential for the students to prepare themselves for taking up any study related to the agro-enterprise sector. To understand various factors of the agri-business sector and its component industries and enterprises, "Project Approach' is an universally accepted method of study. In the project approach all the essential aspects related to the agri-business industry and business units will be considered by preparing project profiles, project reports and feasibility reports.

The important aspects to be considered in understanding and preparing the agribusiness enterprises project profiles and feasibility studies are related to technical, commercial, financial, economic, organizational and managerial aspects. A proper assessment of all these inter-related aspects on realistic terms is very essential.

In the course of preparing project profiles and feasibility studies one has to provide definite conclusions on all basic and essential aspects of the enterprise, various alternatives have to be considered. The profiles help us to gain an understanding of the functioning of agri-business enterprises. In this section the various components or elements of preparing project profile are discussed.

Utility of understanding the agribusiness environment:

1. *Study the various enterprises expose us to different real world situations in the business environment.*
2. *Helps in preparing the project reports for various enterprises.*
3. *Enhances the analytical understanding and functioning of the agri-businesses.*
4. *Provide comprehensive knowledge about the specific enterprises.*
5. *Useful in developing case studies for discussion in class room situation.*

Procedure of preparing the project profile:

The following aspects are studied carefully in the preparation of the project profile of any agri-business enterprise. The students have to collect the following detailed information by visiting any specific business unit and through discussions with the executives, collection of information through records, documents, and secondary sources on the requirements.

1. Name, location and accessibility of the agribusiness.
2. Aims and goals of business enterprise.
3. Functions of business enterprise.

4. Promoters and their background: Experience of the entrepreneurs including their proficiency, skill training received, confidence in the business activities.

5. Size and structure of business, management and organization of the business: Decide whether it is a small unit (SU), Small scale industrial unit (SSIU), Ancillary Industrial Undertaking (AIU) or Small Scale Service Unit (SSSU) or Medium Industrial Unit (MIU) or Large Scale Unit (LSU)

6. Details of the products produced and their prospective demand in domestic, distant and foreign markets in future.

7. Particulars of the location in which agribusiness is going to be started.

   - Reasons for selection of the particular agribusiness among its alternatives.
   - Nature of market environment, consumption styles, demand assessment of the products produced over time.
   - Proximity to supply sources of raw materials and product markets.
   - Nature of transport facilities.
   - Whether agribusiness is in nearby cities or suburban area
   - Availabilities of infrastructure facilities i.e., water, electricity, fuel etc.
   - Discharge and disposal of wastes of agribusiness.
   - Available skilled labour at reasonable wages.
   - Indicate how environment is affected, measures to stop air, water pollution.
   - Show how business will be expanding in future.

8. Assessment of requisite raw material:

   - Provide full details regarding how the necessary raw materials will be procured along with unit prices, cost of transportation etc.
   - Future availability and accessibility of raw material for running agribusiness as per plan over time.
   - Mention the source of imports and their costs.
   - Problems at present and in future regarding raw material use and their solution.

9. Details on require land and other durable assets:

   - Construction cost of the plant including cost of electricity, water, services, purchase and lease options details, if any.
   - Details on land acquisition and land development.
   - Subsidy aspects, sales tax components.
   - Acquisition and construction costs, life span, depreciation of fixed costs.

10. Details of machinery and equipment necessary:

    - Acquisition of machinery, furnish engineering details.
    - Hire, purchase, lease interest, servicing charges etc.
    - Imported machines and their costs, duties, transportation.
    - Installation costs of machinery.

11. Sources of finance:

- § What is share of owners, investors and govt. in the agribusiness?
- § Specify the type of loan, interest paid, security, mortgage etc., repayment schedules.

12. Technical aspects:

- § Provide details about capital investment, use of new machinery, implements and equipment.
- § Furnish details regarding new technologies of information, electronics, engineering, chemical engineering and changes of technologies required for adopting in the agribusiness.
- § What type of market infrastructure is required, indicate and quantify them including the needs of customers for product.

13. Working capital requirements:

- § Indicate what is the requirement of working capital or circulating capital or recurring expenditure to purchase requisite raw materials for the agribusiness.
- § Cash required to pay for wages, salaries, utilities viz., electricity, fuel/energy consumption, stationary, office expenditure, legal expenses, travel and other contingent expenditure.
- § Indicate how working capital is borrowed and spent in production, marketing etc.
- § Mention the quantity and price per unit of inputs purchased using working capital. Specify the share of working capital I different activities.
- § Indicate how its expenditure is minimized.

14. Control of working capital:

- § Proportion of utilization of fixed capital and working capital –
- § Proportion of use of working capital among various working capital items and their relationship with production process, business requirements, time for business cycle or operating cycle, prices, availability of raw material and final product.

15. Production plan and product control:

- § Furnish fuel details of production schedules mentioning the payments and receipts for different purposes.
- § Indicate how various product control methods are used to make agribusiness prosper.
- § Mention the various means of enhancing the productivity of resources used.
- § Specify how quality control measures are adopted – how labor is managed efficiently – how wastes are avoided – incentives given to employees.
- § Provide details on how quality materials are procured and how defects are rectified.
- § Indicate how various devices are employed in product control, process control etc.

16. Borrowed capital:

- § Provide full details of borrowing capital, repayment source.

- § Term loan capital for construction, machinery, land acquisition and other fixed assets.
- § Working capital loan or ST loan taken for day to day requirements.
- § Sources of borrowed capital and purposes, interest rates, promoters contribution etc.,
- § Moratorium of loan requirements.
- § Refinance from apex bodies mortgages.
- § Securities, unsecured loans and interests paid
- § Rephasing and rescheduling of loans.

17. Market information:

- § Give emphasis on demand estimation for raw materials used and products produced by the firm, market perspectives, market demand, export demand etc.
- § Provide necessary information on marketing channels, marketing costs and margins for inputs and outputs.
- § What are direct sales sources – Shops, Exhibitions, demonstrations, publicity, sales on special occasions etc.,
- § What are sources of indirect sales of product – Services to the customers, close contact with customers, product image building through customer attraction and relationships. Wholesalers and retailers help and assistance.
- § Identify marketing strategies required for sales promotion.
- § Indicate marketing problems and their solutions.
- § What incentives are necessary to increase sales, please specify.
- § Indicate measures required to survive in competition.
- § Sales initiatives.
- § Selling methods (advertising practices) followed
- § Price determination, procedures
- § Profits at different sales
- § Describe the relationship among production, sales and consumption
- § Govt. controls on marketing
- § Identify the sources for profits
- § Reasons to reduce profits
- § Measures taken to overcome losses.
- § Reasons for market failures
- § How to survive among competitors
- § How to avoid wastages, loses in production and marketing
- § How changes of Govt. policy affect the sales and revenue of business.

18. Legal aspects and procedures:

- § Price determination procedures, pricing strategies followed, profits at different stages of sales, attracting market share of competitors.
- § Comparative pricing with competing and substitute products – high / low or equal.
- § Sales initiatives and distribution aspects.

- § Selling methods followed.
- § Relationship between production, sales and consumption
- § Product delivery, quantity, quality and standards
- § Govt. controls, competition before entry of product in to market, changes in consumers purchasing capacity, habits and attributes.
- § Use of efficient machinery
- § Test marketing in different markets to know customers response to different prices.
- § Return on capital at different prices.

19. Details on promotion of profits:

- § Identify the causes for low profits / losses
- § Measures to reduce expenditure and costs
- § Effect of market failure
- § Study the effect of competition from others
- § Study the effect of wastage in production
- § Study the effect of changes in policies of government
- § Study the effect of raw material purchases
- § Study the effect of production expenses
- § Risk bearing ability of entrepreneurs
- § Changes in the prices of raw materials and finished products

20. Organizational structure:

- § Details of Board of Directors, different levels of management, decision making and recruitment methods, technical and scientific staff details, salaries and incentives, training programmes for the staff etc., may be collected.

21. Control of debtors and credit sales:

- § Who are the creditors and quantity of credit sales?
- § Normal days up to which the credit is offered
- § General periods of credit sales
- § How the limits and implementation is executed to recover the credit sales?
- § Time period for which the credit is extended
- § Measures to reduce the credit time adopted

22. Costing:

- § Methods of costing followed
- § Ledgers and accounts maintained
- § Accounts classification for expenditure recording and book keeping

23. Legal aspects and procedures:

- § Different agreements made with the business.
- § Legal transactions and their details
- § Agreements with regard to procurement of raw materials and product prices
- § Agreements regarding the changes in the prices
- § Labour acts, land registration, sales taxes, quotas, taxes and duties on imports and exports

23. Future projections of the business:

- § Production
- § Profits
- § Expansion
- § Product diversification

24. Externalities, pollution, environmental problems, social costs etc.

Exercise:

1. Write brief comments on the functioning of the agri-business enterprise keeping in view the strengths, weaknesses, opportunities and threats to the business.
2. Discuss various alternative suggestions to improve the functioning of various aspects of the business.
3. Prepare the summarized project report or business enterprise profile in brief with the details you collected.

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Exercise No: 13 & 14 Date(s): _____ & _____

FORMULATION OF PROJECT FEASIBILITY REPORT OF AGRIBUSINESS ENTERPRISES.

CASE STUDIES 1 & 2

We study in detail about the nature, prospects, costs and benefits of agribusiness and its preference among alternative enterprises in the feasibility studies which are generally prepared by project consultants. Financial and economic analyses are also made at the end to know about the credit worthiness, economic viability of these business enterprises. FAO guidelines are being available with regard to preparation of feasible project reports. As a matter of fact all the procedures have to be followed in feasibility study of agribusiness enterprises. *Cash inflows (returns) and cash outflows (cost) of agribusiness have to be worked out separately* and cash flows should be worked out for business units as per cash flow statement over time.

The balance sheets and income statements over time have to be formulated for business enterprises in question. *All the procedures indicated in financial and economic analyses should be followed and conclusions should be drawn with regard to economic feasibility, financial viability, social acceptability, externalities etc.*, of the agribusiness. In both financial and economic analyses we consider two situations viz., 1) situation without agribusiness and 2) situation with agribusiness enterprise. The costs and benefits of the agribusiness should be worked out separately over time. Incremental benefits should be computed subtracting costs flow over time from benefit stream over time. From this, the incremental benefit of without agribusiness situation should be deducted to arrive at incremental net benefits over the life span of the agribusiness. In economic analyses how national income is increased through additional generation of employment, foreign exchange etc, due to agribusiness should be clearly shown along with its externalities and social acceptability. The projected costs and benefits of agribusiness over its life span should be expressed at constant prices to eliminate inflationary effect in the economy in the financial analysis using such financial prices. We employ project evaluation techniques such as NPW, IRR, N/K ratio, B-C ratio, switching value techniques to assess the credit worthiness, financial viability and economic feasibility of the agribusiness comparing with its alternative agribusiness in a given location.

In economic analysis financial prices are converted into economic prices and to these economic prices, we apply project evaluation techniques and assess how agribusinesses are adding to national income, employment and foreign exchange.

We generally follow project analyses techniques to understand the agribusiness sector studying all its essential components and prepare feasibility report. All the details regarding technical, commercial, financial, economic, organizational and managerial aspects of agribusiness are to be studied.

Feasibility studies provide element by element details of the business activities, the status, the prospects, the choice, the selection, the process, the specifications, the quantum,

the price, the time schedule, the cost and the benefits. The final acts in the feasibility study are the financial and economic aspects of the business. The interrelationship between the business costs (capital and working costs) and the cash inflows have to be analyzed to see whether the investment activity in a particular line of agribusiness is financially feasible or not. Working out the economics of business activity is the prime concern here to know the financial feasibility of the project under consideration.

Utility of feasibility report:

1. *Useful in estimating the cost of production, profitability of any enterprise or product manufacture.*
2. *Useful to compare the feasibilities of various alternative enterprises.*
3. *To know the capital requirements of the enterprises.*
4. *Helps to present the reports to financial agencies or government authorities to convince about the feasibility of starting a business.*

PROCEDURE TO COMPUTE A FEASIBILITY REPORT:

The following aspects are studied carefully and assessed in a systematic manner in the feasibility report of agribusiness.

Economic aspects of the enterprise

a. Non recurring expenditure:

i. land and building requirements:

Land	:	Rs._____
Factory buildings	:	Rs. _____
Office buildings	:	Rs. _____
Godowns	:	Rs. _____
Other buildings	:	Rs. _____
Sub-total	:	Rs. _____

ii. Machinery and equipment:

Cost of machinery and equipment with proper number and specifications	:	Rs. _____
Cost of tools and spares	:	Rs. _____
Cost of electrical installation	:	Rs. _____
Erection charges	:	Rs. _____
Office equipment and furniture	:	Rs. _____
Other pre-operational expenses	:	Rs. _____
Sub-total	:	Rs. _____
Total non recurring expenditure	:	Rs. _____

b. Recurring expenditure (per month or per annum):

i. Raw material

Main raw material (Give quantity and rate per each item)	:	Rs. _____
Consumable stores	:	Rs. _____
Sub-total	:	Rs. _____

ii. Salaries of staff

Administrative and supervisory staff (mention number)		
1. Manager @ p.m.	:	Rs. _____
2. Supervisor @ p.m.	:	Rs. _____
3. Accountant @ p.m.	:	Rs. _____
4. Typist-clerk @ p.m.	:	Rs. _____
5. Others @ p.m.	:	Rs. _____
6. Watchman @ p.m.	:	Rs. _____
Sub-total	:	Rs. _____
Direct labor		
1. Skilled labour @ p.m.	:	Rs. _____
2. Semi skilled labour @ p.m.	:	Rs. _____
3. Unskilled labour @ p.m.	:	Rs. _____
Sub-total	:	Rs. _____
Provision for bonus, P.F, E.S.I, leave wages etc.,	:	Rs. _____
Total of salaries / wages	:	Rs. _____

iii. Other items of expenditure

1. Electricity	:	Rs. _____
2. Fuel	:	Rs. _____
3. Water	:	Rs. _____
4. Rent	:	Rs. _____
5. Stationary and postage	:	Rs. _____
6. Telephone	:	Rs. _____
7. Transportation and packing	:	Rs. _____
8. Advertisements	:	Rs. _____
9. Traveling expenses	:	Rs. _____
10. Miscellaneous expenses	:	Rs. _____
Sub-total	:	Rs. _____

Total recurring expenses (per month / per annum)

a. Raw Material	:	Rs. _____
b. Salaries and wages	:	Rs. _____
c. Other items	:	Rs. _____
Total	:	Rs. _____

C. Capital expenditure

a. Non-recurring expenditure	:	Rs. _____
b. Recurring expenditure (for all months)	:	Rs. _____
Total capital requirement	:	Rs. _____

D. Sources of capital

a. Own capital	:	Rs. _____
b. Borrowings	:	Rs. _____
Total capital arrangements	:	Rs. _____

E. Total cost of production per month

a.	Total recurring expenditure	:	Rs. _____
b.	10% of depreciation on machinery	:	Rs. _____
c.	Approx 5% depreciation on building	:	Rs. _____
d.	Interests on borrowed capital	:	Rs. _____
e.	Provision for bad debts @ ___ % on sales	:	Rs. _____
	Sub-total	:	Rs. _____

F. Profitability (per month)

1.	Production per month (mention quantity or number)	:	Rs. _____
2.	Less of rejections, wastage etc.,	:	Rs. _____
3.	Net production	:	Rs. _____
4.	Cash to be received from the sale of products (Mention selling rate per unit after deducting sale commission)	:	Rs. _____
5.	Other income, if any	:	Rs. _____
	Total of receipts	:	Rs. _____
6.	Less cost of production	:	Rs. _____
7.	Operating profits per month	:	Rs. _____
8.	Operating profits per annum	:	Rs. _____
9.	Less taxation	:	Rs. _____
10.	Net profits	:	Rs. _____
11.	Available surplus (Net profits + depreciation)	:	Rs. _____

G. Percentage of operating profit (per annum)

1. Return on total project cost %
2. Return on own capital %
3. Return on total sales %

Class room exercise:

- Identify the important recurring and nonrecurring cost items for the business.
- Explain how recurring and nonrecurring cost items are going influence the profitability of the business.
- Judge whether the particular business enterprise under study is feasible or not? How? Give your justification / reasons.
- What are the risks associated with the business under study? How they are going to influence the cost of production and profitability.

Assignment:

- Prepare a summery report on the feasibility of the enterprise.
- Prepare alternative feasibility report based on different assumptions of costs, production and profitability.

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Exercise No: 15 Date: _____

SWOT analysis of agribusiness enterprises

Introduction:

The future business environment for agribusiness firms can be characterized by greater volatility and risk. Given this increasingly challenging business environment, developing a strategy that responds to the changing business climate is essential for long-term sustainable competitive advantage and financial success.

Planning for agribusiness: Planning is one of the five functions of management. It is indeed the foremost function and provides the muscle for the body of management. It allows the growth and movement of the business firm in the desired direction. A successful management of the firms is committed to formal planning i.e. operations are carried with planned schedules in the areas of production, marketing, use of work force and financial matters, hence planning has become a way of business life.

Strategic Planning and Analysis: strategy is the integrated and coordinated set of actions and activities that provide value to customers and gain a competitive advantage for the business by exploiting core competencies in specific product or service markets. Any strategic planning activity involves thinking about the future. However, the focus of strategic planning and analysis is not on predicting the future, but instead on making better decisions here and now in order to reach a desired future. In thinking about the future, strategic planning requires information about both the external economic environment in which the business operates and the internal characteristics of the business. This information provides data for the development and evaluation of alternatives.

SWOT analysis: The SWOT analysis is the first step in planning for agribusiness. Thus one of the keys to developing a sound business strategy is conducting a SWOT i.e., Strengths, Weaknesses, Opportunities, and Threats analysis for a business. With the SWOT a business's internal strengths and weaknesses are used to take advantage of external opportunities while avoiding threats.

Learning Objectives:

1. *To expose the students to the SWOT analysis.*
2. *To demonstrate the role of SWOT analysis in agribusiness strategic planning*
3. *To identify the opportunities and strengths, threats and weakness of the business organization.*

Utility of SWOT analysis:

1. *Helps to identify and monitor important macro environmental and micro environmental forces that influence the agribusiness.*
2. *To help to study the possible impact of the threats and opportunities on the business profits and market performance.*
3. *Helps the managers to capitalize on the organizational strengths and opportunities to the business.*

External Environment Analysis / Opportunities and Threats analysis: In conducting an external environmental scan, the agribusiness manager must assess various industry forces. In general, the business unit has to monitor the key macro-environmental forces like demography, economic factors, technological factors, political conditions, legal procedures, social conditions and cultural traditions, and the micro-environmental factors like customers, competitors, distribution channels, other products, suppliers etc.,

These six important forces illustrated in Figure 1. are to be studies under this.

1. New entrants usually bring new capacity and competition for customers and resources. This is a threat to existing businesses in the industry. The threat of entry depends on the presence of entry barriers. Entry barriers make it difficult for another business to enter the industry. Examples of these barriers include economics of scale and capital requirements. Because these are large in many agricultural industries, they prevent new firms from quickly entering the industry.

2. Substitute products are products that appear to be different but can satisfy the same need as another product. Chicken can be a substitute for fish/ meat / beef in consumers' diets.. When switching costs are low, substitutes can place a price ceiling on products. Market analysts often talk about "wheat capping corn." This occurs because wheat and corn are substitutes in animal feed formulations. If wheat prices are low, corn prices will also be low because if corn prices rise, feedmills will quickly shift to wheat in order to keep ration costs low. This will reduce the demand and price of corn.

3. Bargaining power of suppliers affects their ability to raise prices. Suppliers are likely to be powerful if they are few in number, each individual purchaser represents only a small amount of the companies sales, there are not good substitutes of the product purchased, and the product or service is unique.

4. Bargaining power of buyers affects the industry through their ability to force down prices, bargain for higher quality or more services. Buyers are likely to have power if a buyer purchases a large part of the sellers product, if alternative suppliers are plentiful because the product in undifferentiated, the buyer earns low profits and is sensitive to cost differences, and the purchased product is unimportant to the final quality or price of a buyer's product.

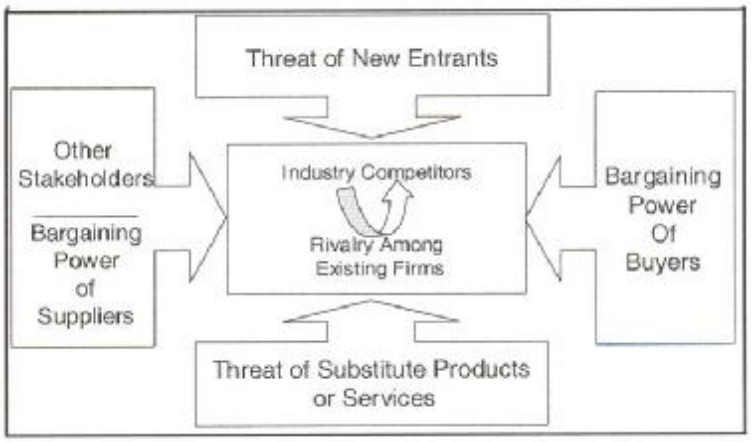

Figure 1: Six forces of External Environment Analysis / Opportunities & Threats analysis.

5. Rivalry among exiting firms is the amount of direct competition in an industry. Industries that have intense competition are characterized by competitors that are roughly equal in size, slow rates of industry growth, the production of commodities, high fixed costs, and high exit barriers arising from investments in specialized equipment.

6. Other stakeholders*:* These stakeholders include federal, state, and local governmental units. These units of government can impose various limits on the actions that businesses can take. While government is a force in every industry, other stakeholders also impact various industries. These stakeholders can include creditors, special-interest groups, and local community organizations.

The business firm should have intelligent system to track trends and important developments that are going on. For each trend or development, the manager has to identify the associated opportunities and threats. Threat is a challenge posed by unfavourable trend that would lead to deterioration in sales or profits of the firm.

Internal Environmental Analysis – Strengths and Weakness Analysis:

The goal of the strengths and weaknesses component of SWOT analysis is to identify those activities conducted in a business that can create a sustainable competitive advantage. It is important to identify those activities in which a business excels relative to other competitors, not just activities that it does equally as well as its competitors. For an activity to be an important strength, it must also be valuable to customers. Unfortunately, objectively identifying strengths and weaknesses for one's own business is very difficult to do. The focus of an internal analysis of the business is to identify, develop, protect, and deploy resources, capabilities, and core competencies. Resources are inputs into a firm's production process, such as capital equipment, cash, skills of individual employees, and talents of management.

Resources are of two types: tangible and intangible. For most agribusinesses, it is fairly easy to recognize tangible resources because they can be seen and counted, and a dollar value can be assigned to them. Tangible resources would include things like storage facilities, trucks and manufacturing facilities. Intangible resources are not so easy to identify. Intangible resources would include technological or mechanical know-how, family or corporate commitment, organizational structure, reputation, etc. These resources, generally, can't be touched or counted and would be difficult to assign a dollar value to. Nonetheless, intangible resources are increasingly becoming the key to the long-term success of businesses both in and out of agriculture. However, just identifying the tangible and intangible resources that your business has is not enough because resources, by themselves, do not create a sustainable competitive advantage.

A firm's capabilities refer to its capacity to deploy resources that have been purposely integrated to achieve a desired end state. Capabilities determine the way a company makes decisions to achieve objectives. More specifically, they are a part of the organizational structure and control systems, which are how decisions are made and what behavior is rewarded. Capabilities don't necessarily reside in individuals, but more in the way that people interact and cooperate to make decisions for the business. To be successful a business uses resources and capabilities to identify and maintain core competencies. A core competency is simply an integration of resources and capabilities that help build a competitive advantage. Core competencies are strengths that allow a business to achieve superior efficiency, quality,

and innovation. For something to be a core competency it needs to be valuable, rare, costly to imitate, and non-substitutable. Valuable capabilities are those that
create value for the business by exploiting opportunities and/or neutralizing threats in the external environment. A rare capability is one that few if any competitors possess.

The work sheet of the SWOT analysis looks like as Figure 2.

Figure 2: Work sheet of SWOT analysis showing external and internal environments.

	STRENGTHS	***WEAKNESSES***
INTERNAL	1 2 3 4 5	1 2 3 4 5
	OPPORTUNITIES	***THREATS***
EXTERNAL	1 2 3 4 5	1 2 3 4 5

Step-wise Procedure of SWOT analysis:

Step 1: Identify the major opportunities the business and its products face in the existing markets.

Step 2: Classify the identified opportunities to their attractiveness and success probability.

Step 3: Arrange these major opportunities in order of importance so that more important ones can be given greater attention.

I,2,3 & 4 in opportunity matrix (Figure. 3)are the factors affecting the performance of the business. For example the business may have powerful machinery system as number 1 factor. Similarly it may have devise measuring its production efficiency, or it may have good software programme. All these opportunities should be measured according to their attractiveness and success probability.

Figure 3. OPPURTUNITY MATRIX

		SUCCESS PROBABILITY	
		HIGH	LOW
ATTRACTIVENESS	HIGH	1 2 3 4	1 2 3 4
	LOW	1 2 3 4	1 2 3 4

Step 4: Identify important threats the business and its products face in the existing market.

Step 5: Classify the threats according to their seriousness and probability of occurrence.

Step 6: Arrange these major threats in order of importance so that more important ones can be given greater attention.

Threats may be seen in the form of competence in the business by rivalry firms, major prolonged economic depression, higher costs, rules & regulations etc., All these threat factors should be measured as 1,2,3…….etc., according to their probability of occurrence and seriousness as shown in Figure 4.

Figure 4: THREAT MATRIX

		PROBABILITY OF OCCURANCE	
		HIGH	LOW
SERIOUSNESS	HIGH	1 2 3 4	1 2 3 4
	LOW	1 2 3 4	1 2 3 4

Step 7: Identify important strengths of the organization by studying its core competency i.e. internal resources and competencies in relation to marketing, financial, manufacturing, material research and economic development, skills, patents, control over key resources and organizational competencies.

Step 8: Arrange these major strengths in order of importance so that the manager should pursue, those market opportunities that allow capitalizing on those strengths of the organization.

Step 9: Identify the major and minor weaknesses the firm possesses in relation to its core competency and resources.

Step 10: Arrange all the weaknesses identified in order of importance, so that the managers can take necessary steps to correct all the weaknesses. (Figure. 5)

Step 11: Draw conclusions based on the SWOT analysis.

Step 12: Characterize the agri-business overall attractiveness as Ideal, Speculative, Matured or Troubled business based on the SWOT analysis (Figure. 6)

Figure 5. Strength and Weaknesses matrix.

		WEAKNESSES	
		MINOR	MAJOR
STRENGTHS	MAJOR	1 2 3 4 5	1 2 3 4 5
	MINOR	1 2 3 4 5	1 2 3 4 5

Figure 6. Characterizing the agribusiness based on overall SWOT analysis.

		MAJOR THREATS	
		LOW	HIGH
MAJOR OPPORTUNITIES	HIGH	***IDEAL BUSINESS***	***SPECULATIVE BUSINESS***
	LOW	***MATURE BUSINESS***	***TROUBLED BUSINESS***

Questions:

1. Analyze the possible impact of major external environmental threats on the market performance of agribusiness firm or its production?
2. How the business opportunities and strengths of the organization can utilize to improve the performance of the business?
3. Suggest possible corrective measures to rectify the organizational weaknesses?

Follow up assignment:

1. Characterize one of the important agribusiness enterprise with the help of SWOT analysis which you can establish in your village / town.
2. Suggest a corporate strategy for the business by specifying the range of markets to be served and kind of products to be offered based on the SWOT analysis.

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Exercise No: 16 Date: _____

STUDY OF AGRO-INDUSTRIES DEVELOMENT CORPORATION

APSAIDC Ltd which was established during the year 1968. The Andhra Pradesh State Agro Industries Corporation Limited (AGROS) was incorporated under the Companies Act 1956 as a Limited company and its name was subsequently changed to A.P. State Agro Industries Development Corporation Limited on 31.10.1979. Agro-Industries Corporations are functioning now in all the states with their head offices at the state capitals and branch offices at district levels. The Corporation went through restructuring phase by reducing the staff from 1600 to 300 and closing down certain non performing activities during 1997 to 2003.

Objectives of AGROS:

- To provide custom hire machinery like dozers for land development to increase cultivable lands.
- To assist the farming community in making available all quality inputs like seeds, fertilizers, pesticides, farm implements etc. under one roof.
- To convert barren lands through systematic Land development and make them suitable for agricultural practices.
- To level the lands with gentle slopes for better irrigation by forming bunds to avoid soil erosion.
- Formation of Irrigation tanks, ponds for aquaculture, de-silting of existing tanks, canals.
- Development of watersheds for optimum utilization of water. Preparation of lands for afforestation.
- To import, export machineries.
- To Promote Agro Based Industries.
- To enter into partnership / Joint Venture.
- Providing improved farm machinery and agriculture implements, for improving efficiency and reducing the cost of cultivation, by importing them, if necessary.
- Relief to farmers in the event of natural calamities by providing machinery for clearance of sand casting etc.
- Multiplication of new implements and machinery by Agricultural Universities and other Research Institutes.

Agro Industries Corporation focuses on manufacture of fertilizers, pesticides, marketing of agro-industrial products through sales and services. It identifies, promotes and develops the relevant agro-industries in suitable areas where the raw materials and in abundant. Agro-Industries Corporations provide the requisite market information, outlook and assistance in quality improvement. These work for development of basic infrastructure, expanding the availability of credit sources and work for the promotion of better production technologies and

marketing strategies of agro-industrial products. They work in developing farm based essential backward linkages like
supply of credit, inputs, production technologies and services etc., and forward linkages like processing, storage, marketing etc., there by stimulating the productivity levels.

The oriental countries like Japan, Korea, Taiwan, Thailand, Malaysia etc., have shown us as to how Agro Industries and agro-exports could boost their economics. Recently in India, the share of agro-industries in GDP is increasing from 20 to 23 per cent. Their employment contribution is also rising from 25 per cent to more than 36 per cent. Unregistered units and small scale cottage units in India are in fact responsible to have major share in the net value added (NVA) from Agro Industries. A wide range of food and edible products viz., coffee, tea, cashew kernels, spices, sugar, molasses, rice, fish, meat, fruits and vegetables, non-food commodities like oil cakes, tobacco, raw cotton, cotton yarn, coir yarn, jute, leather, silk, wool, etc., constitute the raw material for the agro-industries.

According to the report of the working group on food processing and post harvest technology in the 8th Five Year Plan, the processing industries constitute 79,000 rice mills,2,66,000 floor mills, 10,000 dal mills, 2,20,000 oil mills, 50,000 bakeries, 5,000 pasta units, 15,000 traditional food units and 2,000 poha making units. These primary processing units nearly accounted for 90 per cent of net value added, and the rest 10 per cent of net value added came from secondary and tertiary processing units. These accounted for 48 per cent of total employment and 23 per cent of working capital. The capital productivity of agro-industries is 0.7 which is almost double of that (0.35) of non agro-industries. Contrary, the labour productivity of is less. The agro-industries constitute 33-40 per cent of agril. exports. This is more than double of that of agril. exports share (12-16% in GDP) in India.

We notice the shift to chemical based industries which include plants for solvent extraction from oil seeds, modern dairies for producing butter milk, butter, cheese, chocolates, milk powder etc., factories for producing a variety of paper and board from sugarcane begasse, medicines from medicinal plants, roots, tubers etc., factories for producing sugar, vermicilli, glucose etc., from maize and cassava; factories for fruits and vegetable products,; fish and meat products, wines, man-made fibers, fabrics etc., The degree of processing has been considerably intensified and modernized by the growth of processed food industry which is based on cooking, mixing, chemical interactions and thus producing a textured vegetable food. These units have attracted higher capital investments and adoption of advanced technologies even in rural areas because of their lucrative nature.

After the withdrawal of excise duty on processed fruits and vegetables products in 1991-92, there has been a significant growth rate of these industries since then. Changes in EXIM policy (Export and Import Policy) and exchange rate adjustment system have helped in increasing (400%) the export performance of food processing industries. For desired growth of these industries, they need to be delicenced and decontrolled for the benefit of the rural people. The entry of experienced foreign and domestic companies should be encouraged to upgrade the agril. linkages from input supply and crop productivity through transport and storage to processing and marketing.

Under DDS (Duty Drawback Scheme) all taxes paid by exporter on indigenous and imported inputs are refunded fully. Under EPCG (Export Promotion Capital Goods Scheme) the production firm can import raw materials and inputs at a confessional duty of 15%. The APEDA (Agricultural and Processed food products Export Development Authority) assists growers,

cooperatives, federation to set up facilities like sorting, grading, packing, pre-cooling and cold storage. It provides financial assistance up to a maximum Rs. 5 lakhs as grant in aid. It assists in specialized transport like refrigerated van providing loan up to Rs. 1 to 5 lakhs. MPEDA (Marine Products Export Development Authority) is taking care of all the related issues in the export promotion of marine products. NPDB (National Poultry Development Board) for increasing the exports of poultry products is also started to create the necessary infrastructure.

Under the liberalized policy of Indian Govt. for liberalization of markets, the Ministry of Food Processing has decided that various controls including QR's through quotas, Minimum Export Prices (MEP) and import duties etc should be removed. In addition all restrictions on the movement, production and trading should be phased out to create a unified domestic market. So, all the commodity boards are asked to act as export promotional agencies. All these situations of the economy necessitates for the further growth of agri-based industries through the promotional agencies like AGROS.

- On visit to the nearby AGROS located at _____, we collect the following information from the concern authorities.

1. Name of the organization:
2. Location and access:
3. Area of operation:
4. Structure and organization
5. Management
6. Financial sources
7. Objectives
8. Functions:
9. Progress made so far in various areas of operation
10. Problems in achievement of its objectives and their remedial measures
11. Policy measures required to become successful
12. Special measures taken for export of agril. Processed products.
13. How it is helping commodity boards, export and import agencies in international trade.
14. Procedures to be adopted in exports and imports.
15. Procedures in obtaining the requisite credit for starting agri-industries
16. How it is related to APEDA, MPEDA, KVIC, SSIDC etc.,
17. Strategies required promoting exports and imports from agriculture.
18. Any other relevant information

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