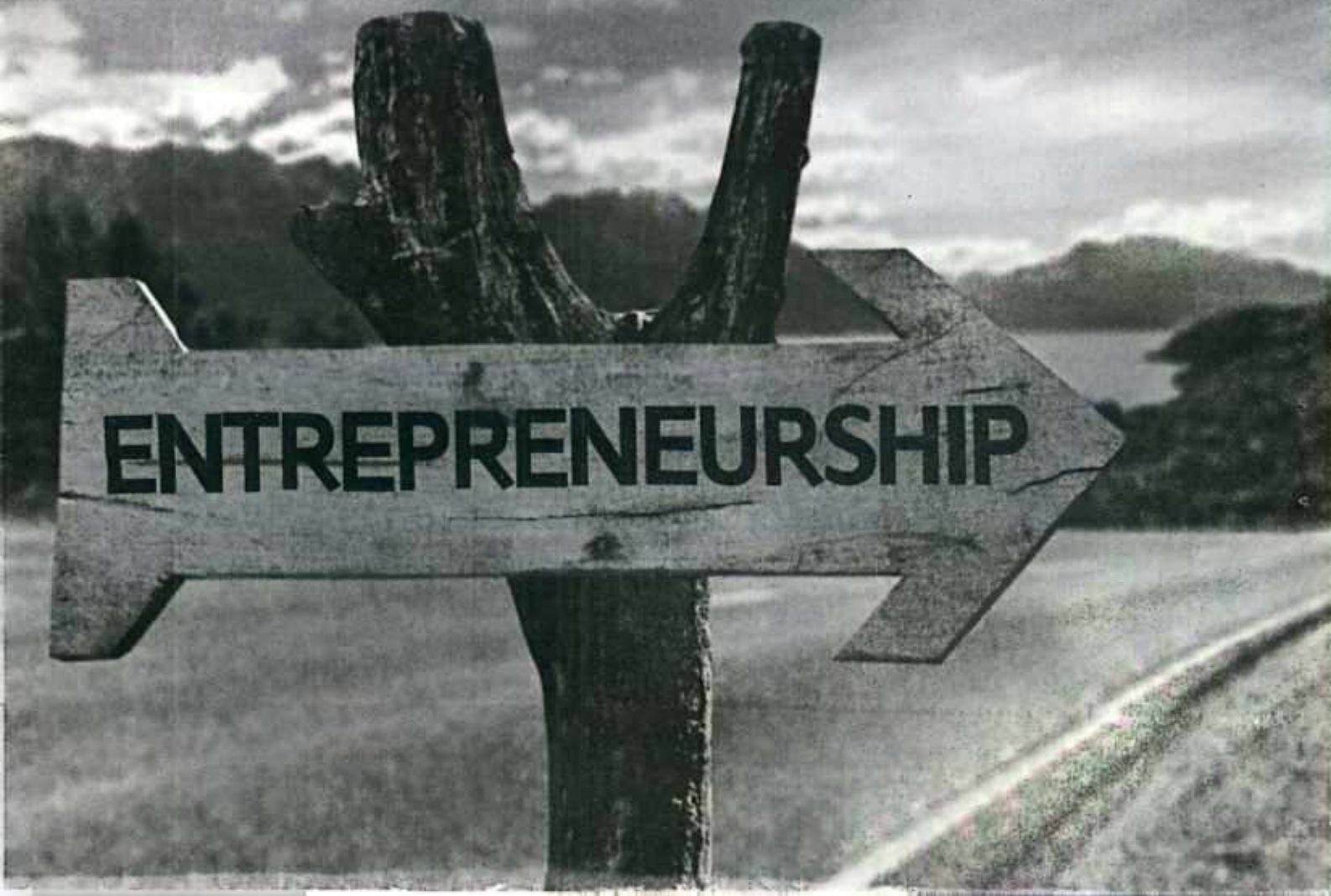
Entrepreneurship



After completing this lesson, you will be able to:

- identify a problem and create a business using design thinking.
- digital tools to create and present a business plan for an entrepreneurial solution.



Get Recognition



Many people keep on thinking about which business to choose from, but startups are easy to create especially for young professionals who are yet to start their career. Opting for an entrepreneur is quite a feasible prospect and with some hard work and well defined strategies your career will take-off in no time. Sky is the limit!!

7.1 You Will be Your Own Boss!

However, you will have to use your judgment and your sense of what is right and wrong. You have a RESPONSIBILITY to your community to be an ethical entrepreneur.

7.1.1 The Concept of Entrepreneurship

The process of creating an enterprise is called "entrepreneurship". It involves the tendency of mind to calculate risks with confidence to achieve a pre-determined business or industrial objectives.

It is a process undertaken by an individual which involves taking risks and making the necessary investments under conditions of uncertainty and innovating, planning, and taking decisions so as to increase production in agriculture, business and industry etc.

Entrepreneurship is therefore requiring composite skill, the resultant mix of many qualities and traits - these may include tangible factors as imagination, readiness to take risks, ability to bring together and put to use other factors of production capital, labor, land, as also intangible factors such as the ability to mobilize scientific and technological advances apart from acquiring required licenses, approvals and finance from government and financial agencies.

7.1.2 What is an Entrepreneur?

Entrepreneur is a person who starts or own a business, organizes and manages it taking on financial risks for the sake of profit. He who shifts economic resources out of an area of lower and into the area of higher productivity and greater yield. The researchers have made much effort over the last few decades trying to paint a clear picture of "the entrepreneurial personality." Although these studies have identified several characteristics entrepreneurs tend to exhibit, none of them has isolated a set of traits required for success in the running of business. A brief summary of characteristics one successful entrepreneur must possess are:

1. **Desire for responsibility.** Entrepreneurs feel a deep sense of personal responsibility for the outcome of ventures they start. They prefer to be in control of their resources, and they use those resources to achieve self-determined goals.
2. **Preference for moderate risk.** Entrepreneurs are not wild risk takers but are instead calculated risk takers.
3. **Self-reliance.** Entrepreneurs must fill multiple roles to make their companies successful, especially in the early days of a start-up. Because their resources usually are limited, they end up performing many jobs themselves, even those they know little about. Yet, entrepreneurs demonstrate a high level of self-reliance and do not shy away from the responsibility for making their businesses succeed. Perhaps that is why many entrepreneurs persist in building businesses even when others ridicule their ideas as follies
4. **Confidence in their ability to succeed.** Entrepreneurs typically have an abundance of confidence in their ability to succeed and are confident that they chose the correct career path. Entrepreneurs' high levels of optimism may explain why some of the most successful entrepreneurs have failed in business—often more than once—before finally succeeding
5. **Determination.** Some people call this characteristic courageous. The ability to focus intently on achieving a singular, long-term goal. Studies show that grit is a reliable predictor of achievement and success, whether the goal involves launching a successful business, Successful entrepreneurs demonstrate high levels of determination, especially in the face of challenging circumstances
6. **Desire for immediate feedback.** Entrepreneurs enjoy the challenge of running a business, and they like to know how they are doing and are constantly looking for feedback. The feedback they receive from their businesses drives them to set higher standards of performance for their companies and themselves.
7. **High level of energy.** Entrepreneurs are more energetic than the average person. That energy may be a critical factor given the incredible effort required to launch a start-up company. Long hours and hard work are the rule rather than the exception, and the pace can be grueling.
8. **Future orientation.** Entrepreneurs have a well-defined sense of searching for opportunities. They look ahead and are less concerned with what they did yesterday than with what they might do tomorrow. Not satisfied to sit back and revel in their success, real entrepreneurs stay focused on the future
9. **Skill at organizing.** Building a company "from scratch" is much like piecing

together a giant jigsaw puzzle. Entrepreneurs know how to put the right people together to accomplish a task. Effectively combining people and jobs enables entrepreneurs to transform their visions into reality

10. **Value of achievement over money.** One of the most common misconceptions about entrepreneurs is that they are driven wholly by the desire to make money. To the contrary, achievement seems to be entrepreneurs' primary motivating force; money is simply a way of "keeping score" of accomplishments—a symbol of achievement. What drives entrepreneurs goes much deeper than just the desire for wealth

Entrepreneurs see potential where most people see only problems or nothing at all, a characteristic that often makes them the objects of ridicule (at least until their ideas become huge successes)

The benefits of entrepreneurship. Driven by these personal characteristics, entrepreneurs establish and manage small businesses to gain control over their lives, make a difference in the world, become self-fulfilled, reap unlimited profits, contribute to society, and do what they enjoy doing.

The drawbacks of entrepreneurship. Entrepreneurs also face certain disadvantages, including uncertainty of income, the risk of losing their investments (and more), long hours and hard work, a lower quality of life until the business gets established, high stress levels, and complete decision-making responsibility

7.1.3 What is Design Thinking?

Some of the world's leading brands, such as Apple, Google and Samsung, rapidly adopted the design thinking approach, and leading universities around the world teach the related methodology—including Stanford, Harvard, Imperial College London etc. Also implemented in Pakistan like IBA Karachi, NUST, NED, COMSATS and Pak-Austria Fachhochschule etc.

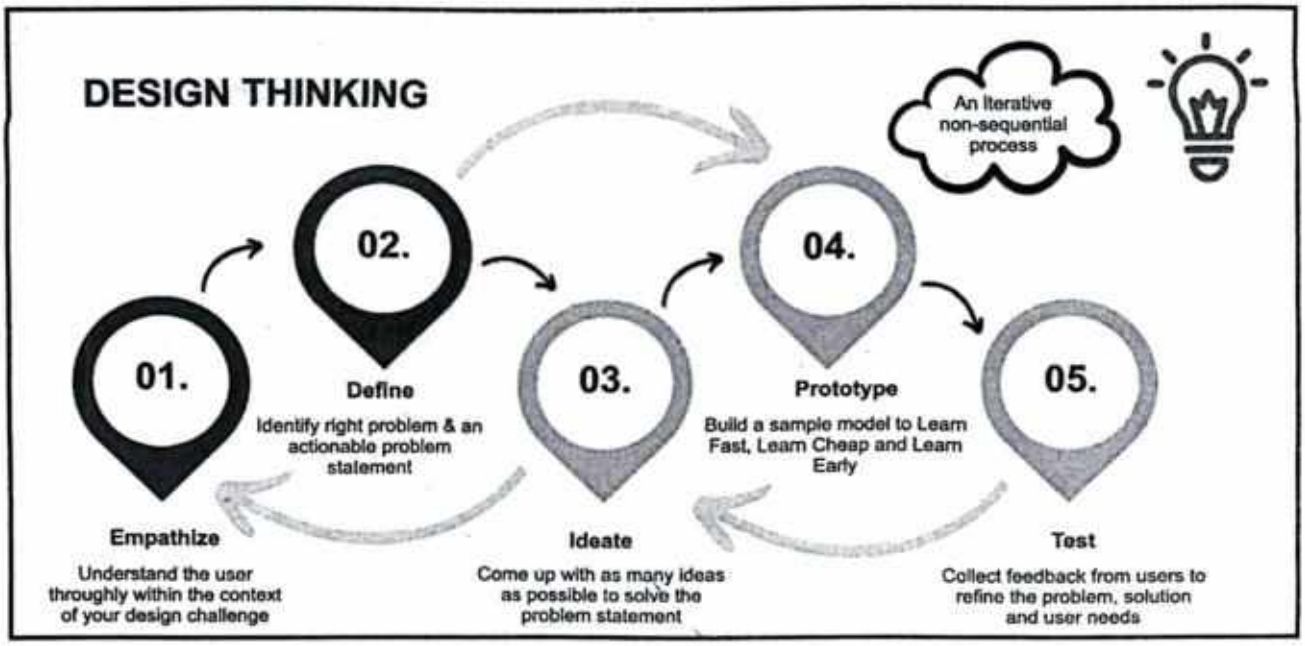
Design thinking is an iterative and non-linear process that contains five phases: 1. Empathize, 2. Define, 3. Ideate, 4. Prototype and 5. Test

One can carry these stages out in parallel, repeat them and circle back to a previous stage at any point in the process.



Teacher's Guide

"Young Innovators: Design Thinking Challenge" (https://younginnovators.my/) is hosted for kids, guiding them through problem identification in their school or community, followed by brainstorming solutions and conceptualizing potential businesses to address the problem.



The **Design Thinking** process is a human-centered approach to problem-solving that involves five key stages: **Empathize, Define, Ideate, Prototype,** and **Test**. It starts with understanding users' needs and challenges through observation and interviews (Empathize), followed by defining the problem based on the insights gathered (Define). Then, a wide range of creative solutions is brainstormed (Ideate), and the most promising ideas are turned into simple prototypes for testing (Prototype). Finally, these prototypes are tested with real users to gather feedback and refine the design (Test). The process is iterative, often revisiting earlier stages to improve solutions, ensuring they are both innovative and user-centered.

7.1.4 Developing a Business Plan

The primary goals of the business plan are to guide entrepreneurs as they launch their businesses and to help them acquire the necessary financing to launch. A business plan offers:

- a systematic, realistic evaluation of a venture's chances for success in the market.
- a way to determine the principal risks facing the venture.
- a "game plan" for managing the business successfully during its start-up.
- a tool for comparing actual results against targeted performance.
- an important tool for attracting capital in the challenging hunt for money

In today's global competitive environment, any business, large or small, that is not thinking and acting strategically is extremely vulnerable. Every business is exposed to the forces of a rapidly changing competitive environment, and in the future small business

executives can expect even greater change and uncertainty

A business plan is a written summary of an entrepreneur's proposed business venture, its operational and financial details, its marketing opportunities and strategy, and its managers' skills and abilities. The plan serves as an entrepreneur's road map on the journey toward building a successful business. A business plan describes which direction the company is taking, what its goals are, where it wants to be, and how it intends to get there. The plan is written proof that an entrepreneur has performed the necessary research, has studied the business opportunity adequately, and is prepared to capitalize on it with a sound business model.

Preparing a sound business plan requires time and effort, but the benefits greatly exceed the costs. Building a plan forces a potential entrepreneur to look at his or her business idea in the harsh light of reality by putting the concepts developed in the business model into specific detail.

The elements of a business plan may be standard, but the way entrepreneurs tell their stories should be unique and reflect the specific strengths of their business model, the experience of their team, their personality and how it will shape the culture of the business, and their enthusiasm for the new venture.

Entrepreneurs can use business planning software available from several companies to create their plans. Some of the most popular programs include Business Plan Pro (Palo Alto Software), PlanMaker (Power Solutions for Business), Plan Write (Business Resources Software), Canva and WordPress.

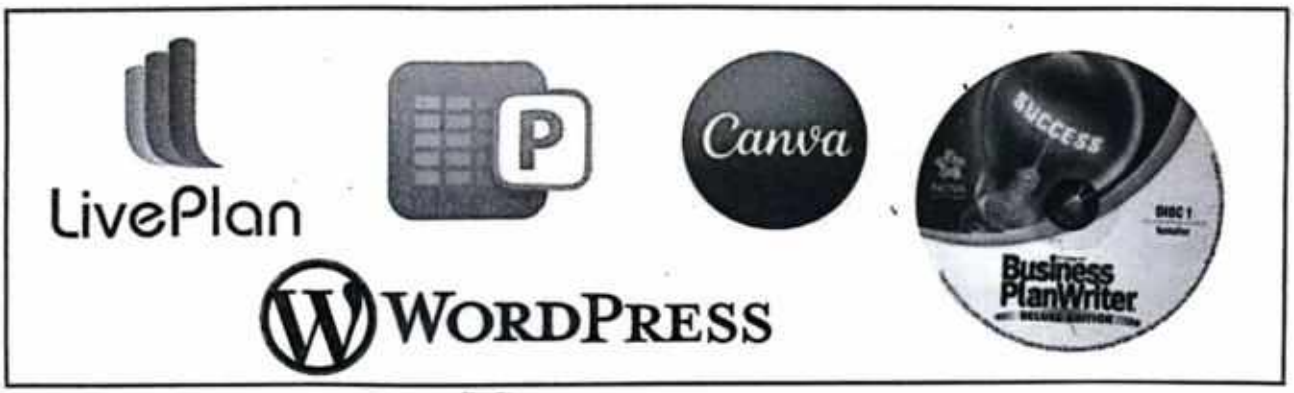
Business Plan Pro is LivePlan ideal for entrepreneurs who are writing their first business plan. This software comes pre-loaded with more than 500 business plan templates to help you get started on your own. If that's not enough, you also get step-by-step instructions for each section, and an optional video course that breaks down each section of your business plan and explains the reasons for including it. LivePlan asks you questions about your business, you plug in the answers. It's as easy as that. You'll get straight-forward instructions with examples on:

- Writing a pitch that grabs investors' attention
- What to include in your marketing plan
- Every essential piece of your business plan

- **LivePlan** save lot of time because the software does so much of the work for you. All you have to do is answer questions and data.
- **PlanMaker** is a spreadsheet program that is part of the SoftMaker Office suite. It is available on Microsoft Windows, MacOS, Linux and Android and iOS.
- **PlanWrite** gives you all the tools you need to create your business plan and present it

to investors. Start with one of their hundreds of examples, and then use their built-in wizard to guide you through the process of customizing the plan to fit your business

- **Canva** is a free to use online versatile app that lets you create stunning graphics, videos and social media content with ease. You can also use Canva for desktop, work with templates, collaborate with your team etc.
- **WordPress** is the leading website creation tool worldwide, powering over half of the web's content. This open-source content management system (CMS) is versatile and easy to use, making it an ideal choice for users of all skill levels. An entrepreneur should use the following elements as the starting point for building a plan and should modify them as needed to better tell the story of his or her new venture.



7.1.5 My entrepreneurial skills

There are different types of skills:

- Conducting myself (Confidence in myself, managing my life, being responsible etc.)
- Thinking (being creative, solving problems, making decisions, observing my surroundings, basing actions on needs and opportunities etc.)
- Interacting with people (working with others, accepting others irrespective of their cast, gender, social status, whether they have a disability or not, etc.)
- My safety and survival (self-preservation, first aid, drug abuse prevention etc.)What I can do (repairing items like mobiles, batteries, cooking, making crafts, reading, singing etc.)

7.1.6 My Ideas for small business

An entrepreneur should consider their community and identify its needs for products or services. They could approach this by identifying a difficulty the community is experiencing and then determining what product or service could help overcome that difficulty.

- What needs do I know about in my community?
- What can be done to address these needs?
- Which of my skills can be used to address these needs? How?
- Which of these needs can my colleagues and I develop into a business idea?



7.1.7 My market

If a product or service is needed by a person or a group of people, there is a **demand.** The people who need the product or service, and are willing to pay for it, are **customers.** The number of customers in the community represents the market for a service or product. Business people who provide similar products or service are **competitors.**

A business can estimate the size of its market by carrying out surveys of customer needs, preferences and willingness to pay. The survey should try to find answers to questions such as:

- Who are the people (the part of community) interested in my product (age, gender, income status, etc.)
- Why do they like or dislike my product (shape , size, colour, etc.)?
- Are they willing to pay a commercial price for it?
- Will they always want to buy the product regularly or seasonally (sustainable)? Or will they stop buying it completely (unsustainable)?
- How many of my products or hours of my service will they need?

- Where should the product be available (location of sales points)
- Who are my competitors?

7.1.8 Setting My Price

Most businesses will want to make a profit on products or services sold. Profit is the difference between the cost price and selling price. Part of this money can be put back into the business. Profit should be calculated as a percentage of the cost price. The profit margins should always be reasonable.

Fixing the selling price of a product or service must take into consideration the following:

- Cost of production (including your own salary)
- Overheads
- Profit

It is therefore important to accurately calculate each of these, so that the final selling price is realistic.

7.2 Cost of Production + Overheads + Profit = Selling Price

7.2.1 Cost of production and overheads

Calculate each part or component that goes into production and overheads and add them up. Labor and depreciation of equipment (when equipment loses its value over time) may also need to be taken into account. In calculating the cost of labour, the entrepreneur should set a wage that adequately compensates the workers' knowledge and contribution, taking into account the experience and qualifications of worker, prevailing basic wage rate , government taxes and social security contributions.



7.2.2 Profits

The entrepreneur should set the level of profit made on the sale of a product or service carefully, taking into account the relationship between demand for the product (how many people want it) and the available supply (number of products available to be sold). If demand is great for the available supply, the price (and thus the profit) may be increased. If there is a large supply, but few people want to buy, then prices may drop. An excessively high price due to a big margin of profit will dissuade customers. When sales increase, profit margins may be reduced. This can enable the entrepreneur to lower the selling price, therefore allowing the business to secure the market and even expand it.

7.3 Devising a Business Plan

Steps in devising and developing a business plan are discussed as follows:

7.3.1 Executive Summary

It is said that most critical portion of a business plan is the executive summary. Once, you have developed the whole business plan only then in the end an executive summary is devised; like a cherry on the top. Executive summary not only condenses the entire business plan but also offers a general overview about the main aspects to the reader. As it is supposed to be a summary, therefore be concise, to the point and cover all major aspects regarding the goals of the business, product, cost, timeline, intended audience, promotion strategy, etc. Preferably, an executive summary should not last more than a page, though it is not a hard and fast rule. MS Word is a good tool for preparing a business plan.

7.3.2. You and Your Startup.

As an entrepreneur, just like you would like potential people and companies to join you, similarly other party would like to know as well with whom they are about to shake hands and what are the intentions of this hand shake. So, you should start with explaining about your company and your team, the hierarchy of the company and the vision and goals of the company. Additionally, goals may be of short-term and of the long run. The short term goals will provide the insight that what you intend to achieve even if you walk along the path alone. On the other hand, your long term goals if synchronized with other party will allow them to envision possible endeavors that both the companies can explore while going hand-in-hand.

Your goals should be "SMART", as follows:

- S-Specific: Be precise and clear in setting up a goal
- M- Measureable: Goals should be quantifiable and can be assessed
- A-Achievable: Set attainable small goals which can be achieved, that provides motivation to move forth



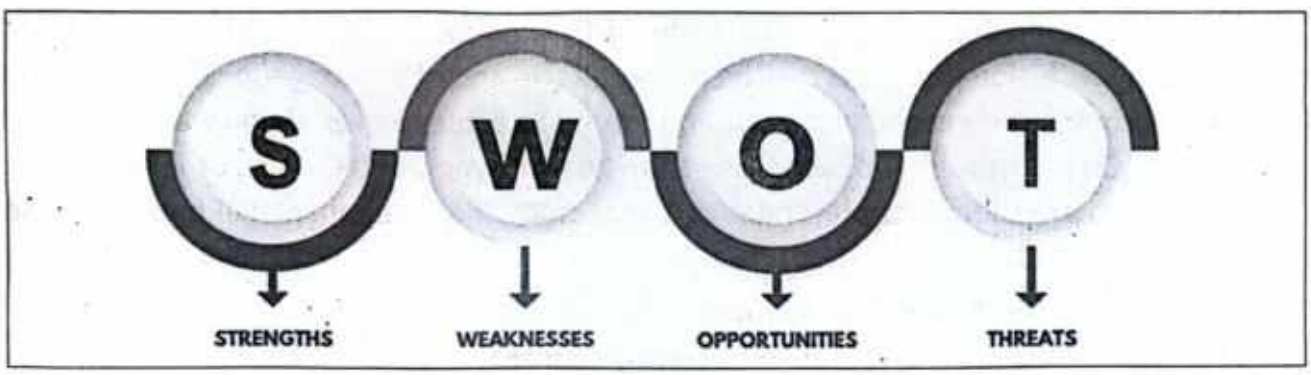
- R-Realistic: Goals should be convincing in nature, not in the clouds.
- T-Time-Bound: Strategies and goals need to be reviewed for improvement, so set the stop watch.

This way, the reader and potential future stake holders have a pretty good idea about the potential of your team and product.

7.3.3. Analyze the Market

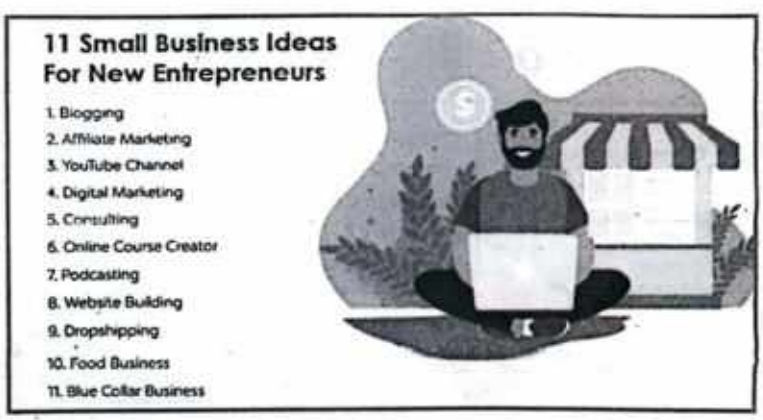
For the sake of your product and company's profit, it is quite critical to analyze the market situation and trends before starting the business. However, you need to keep an eye on the changing trends and demands of the market, to cope up with the supply. And don't follow your already devised strategy blindly. It will be quite difficult to enter a market, if you have read it wrong. So, exploring and evaluating the market is an essential component.

SWOT analysis is a good technique to evaluate your product in context of the market. Your advantages, disadvantages, possibilities, and risks are examined in a SWOT analysis. It highlights the best aspects of your business, skills you may lack, trends and opportunities in the market, risk factors, etc.



7.3.4. Enlist Products / Services.

The major portion of your business plan should emphasize on your products / services. You may further decompose the products or services offered and sketch a breakdown for deeper understanding of the product to the reader. It is vital to remember that you ought to be the one who knows your product and no one else knows it better than you. So, should your business plan reflect this phenomenon. The more relevant information you provide, the more strong is your business proposal.



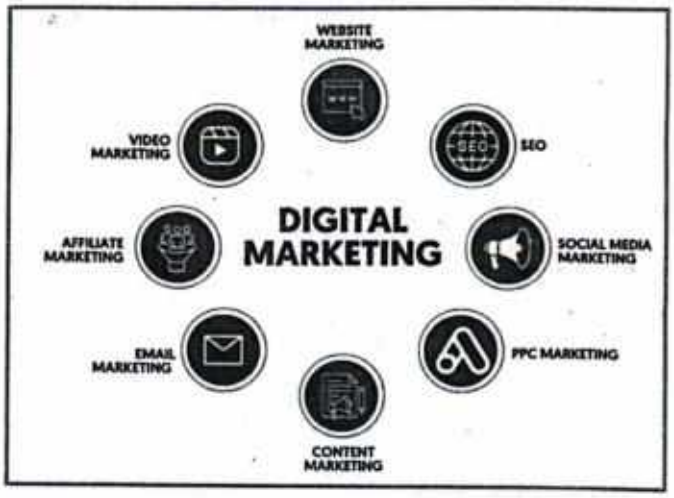
7.3.5. Identify your target market.



Every entrepreneur has a sketch of a client/company with whom he wishes to have a long-term association and so should be a plan to target such client(s) and retain them by providing qualitative service. Once, you have visualized such a clientele, it will become easier to devise your marketing and promotional strategy. The sketch could include educational background, age brackets and geographical area as the primary parameters. Thereafter, things will be on the roll and you will be able to expand / revise your strategy, whenever required.

7.3.6. Precise Promotional Strategy.

The same clientele whom you desire are the ones affecting your promotional strategy. So, you should be quite clear about pre-sale strategy and post-sale contacts and services to the clients. Those points are your bag of tricks with which you keep in contact your client and those are in fact the real free-marketers for your product and company. Social media platforms are a good option to opt for targeting new clientele and knocking the old ones, periodically with new promotions and offers. 'Numbers' are a good choice to opt for a precise promotional strategy, like cost of the new product, discounts offered, upgradation cost as compared to new purchase, etc.



Keeping in mind, there may be many other parameters in your sight, but it's up to you to decide which information is vital for the clientele and which may create confusion and dilute your strategy.

7.3.7. Budget



Every product and service provided takes time, money and effort. In terms of an entrepreneur you have to measure every parameter that you spend and assess it on real-terms. Based on your goals and potential clientele, budgetary details may vary. However, balance sheet, cash-flow and income reports highlighting profit

is positive or negative over a period of time, should be in hand's reach and reviewed periodically. You cannot drag an unsuccessful business for long. Nevertheless, a negative income statement can generate profits with clear goals, precise promotional strategy and experienced stakeholders who are able to take good decisions in a timely manner.

How to calculate financial aspect

Calculating the pricing for a candy-making project as an entrepreneur involves several key steps to ensure that your pricing strategy covers your costs, generates a profit, and remains competitive. Here's how you can break it down:

1. Cost of Goods Sold (COGS)

This includes all the direct costs related to producing the candy. It involves raw materials, production labor and packaging.

a. Raw Materials

- Sugar, corn syrup, chocolate, flavorings, coloring, and other ingredients.
- Estimate the quantity required for each batch and the cost of each ingredient. For example:

  1 Kg of sugar = Rs.150

  1 Kg of chocolate = Rs.400

  Flavoring (per bottle) = Rs.300, etc.

Example:

Sugar: 1 Kg x Rs.150 = Rs.150

Chocolate: 2 Kgs x Rs.400 = Rs.800

Flavoring: 0.5 oz x Rs.150 = Rs.75

Total Raw Materials for One Batch: Rs.150 + Rs.800 + Rs.75 = Rs.1025 (assuming this makes 20 units of candy).

b. Packaging

Packaging can include bags, boxes or wrappers for your candies. Ensure to estimate cost per unit. For example, Bag/box = Rs.20 per unit

i.e. Total Packaging for One Unit: Rs.20

c. Labor Costs

Labor costs include any wages that is paid to employees to produce the candy. This could include time for mixing, cooking, packaging, etc.

Example:

If your workers take 2 hours to make 100 candies and pay Rs.15/hour:

2 hours x Rs.15 = Rs.30 total labor for 100 candies

Labor cost per candy: Rs.30 / 100 = Rs.0.30 per candy

d. Utilities/Overhead

Utilities like electricity for cooking, water, etc. These costs should be calculated on a per-unit basis.

Example:

- Utilities: Rs.5 for a batch that makes 100 units.
- Per unit: Rs.5 / 100 = Rs.0.05 per candy.

e. Fixed Costs

These are the non-variable costs, like rent for your space, equipment depreciation, licenses and insurance.

Example:

- Rent: Rs.500/month, assuming you make 500 candies per month.

Rent per unit: Rs.500 / 500 = Rs.1.00 per candy

2. Total Cost Per Unit

Once you've accounted for all costs, you can calculate the total cost per unit of candy.

Example Calculation for One Candy:

- Raw Materials = Rs.51 (based on the earlier raw material breakdown)
- Packaging = Rs.20
- Labor = Rs.0.30
- Utilities = Rs.0.05
- Fixed Costs (rent) = Rs.1.00

Total Cost per Candy = Rs.51 + Rs.20 + Rs.0.30 + Rs.0.05 + Rs.1.00 = Rs.72.35

3. Setting Your Selling Price

Now that you know the cost per unit, you need to determine a selling price that allows you to make a profit. Typically, entrepreneurs use a **markup** to set the price.

Markup Formula:

- Selling Price = Cost Price + (Markup Percentage × Cost Price)

For example, if you want a 50% profit margin:

- Markup = 50% of Rs.72.35 = Rs.36.18
- Selling Price = Rs.72.35 + Rs.36.18 = Rs.108.53

You may round this to Rs.110 or Rs.100, depending on your market research and competitors.

4. Considerations for Profit Margin

Gross Profit Margin: This is calculated as:

Profit Margin=Selling Price−Cost Price Selling

For a selling price of Rs.100 and a cost price of Rs.72.35:

Profit Margin=100−72.35×100=27.65%

Adjusting for Volume Discounts or Wholesale Prices: If you're selling in bulk, you may need to offer discounts while ensuring your profit margin remains acceptable.

5. Market Research & Competitor Pricing

- **Competitive Pricing:** Research competitors' pricing for similar candies in your market. Your price should be competitive while still covering costs and providing profit.
- **Target Market:** Price according to the target customer segment. For luxury or premium candies, higher prices may be appropriate, while for mass-market candies, lower prices may be necessary.

6. Seasonal or Promotional Adjustments

Consider offering seasonal promotions or discounts, such as around holidays, or if you're introducing new flavors. Special offers can increase sales volume but must be calculated carefully to not impact profitability too much.

7. Profit Forecasting & Cash Flow

Create a forecast to predict your profits based on expected sales. For example, if you sell 1000 candies per month at Rs.100 each:

- Revenue = 1000 x Rs.100 = Rs.100,000
- Cost of goods sold = 1000 x Rs.72.35 = Rs.72350
- Profit = Rs.100,000 - Rs.72,350 = Rs.27,650

Ensure your sales projections are realistic and based on market demand.

Summary of the Calculation Steps:

1. Determine Costs: Include raw materials, labor, packaging, utilities, and fixed costs.
2. Calculate Unit Costs: Add up all direct and indirect costs for each unit of candy.
3. Set Selling Price: Based on desired profit margins and competitor prices.
4. Profit Margin: Ensure that your pricing strategy provides a reasonable return.
5. Consider Marketing & Sales: Adjust pricing for seasonal promotions, bulk sales, or targeted discounts.

This method will help you set prices that ensure you cover costs and achieve profitability as a candy-making entrepreneur.



Exercise

Select the suitable answer for the following Multiple Choice Questions (MCQs).

1. Which are the function of an entrepreneur?
   (a) Risk bearing (b) Innovation
   (c) Organizing and managing (d) a, b, c
2. An entrepreneur enters in to business to improved quality product by their invention and discoveries comes under
   (a) Technical entrepreneur (b) Professional entrepreneur
   (c) Novice Entrepreneur (d) a, b, c
3. An entrepreneur who introduce new idea, methods of production and discovers new market is called as
   (a) Technical entrepreneur (b) Innovative Entrepreneur
   (c) Novice Entrepreneur (d) a, b, c
4. Entrepreneurship can.....the Gross National Product
   (a) Increase (b) Decrease
   (c) Neither increase nor decrease (d) None of a, b, c
5. Entrepreneurship can .....the Unemployment
   (a) Increase (b) Neither increase nor decrease
   (c) Decrease (d) a, b, c
6. A stable and dynamic political environment play
   (a) Positive role in business growth (b) Negative role in business growth
   (c) No role in business growth (d) None of a, b, c
7. A business plan is a written summary of:
   (a) Proposed business venture (b) Its operational and financial details
   (c) Its marketing opportunities and strategy (d) a, b, c

Give Long answers to the following Extended Response Questions (ERQs).

1. How well does the entrepreneur fit the entrepreneurial profile described in this chapter?
2. Interpret the advantages and disadvantages that the entrepreneur sees in owning a business.
3. Conclude the advices that could be offered to someone who is considering to launch a business.

4. Articulate the main reason for young people to be involved in business.
5. Enlist contributions that small businesses make to our economy.



Lab Activity

Activity 1

Design a marketing oriented Business Plan of your interest.

Activity 2

Design a Social Media Marketing Strategy for selling of packed sea food products.

Activity 3

Calculate a cost of production of any tool or equipment available in your classroom.

Activity 4

Choose an entrepreneur in your community and interview him or her. What's the "story" behind the business?

Teacher's Guide

Canva (https://www.canva.com/) is an easy-to-use graphic design tool that allows students to make eye-catching business presentations. It provides pre-made themes, drag-and-drop visual element addition capabilities, and real-time workgroup communication tools. Students may effectively express their business concepts by mixing well-structured material with powerful images.

Suggested Reading and Resources

Scarborogh, N & Cornwall. J., (2016) Essentials of Entrepreneurship and Small Business Management , Pearson Education Limited, Edinburgh, England.

Students can refer to http://www.smeda.org.pk/ to get market size of various sectors.

Financial feasibility: Sources of information / data for market estimation, growth trends for projections can be: Pakistan Bureau of Statistics (PBS), Chamber of commerce, trade associations, ITC's www.trademap.org etc.

Think, pair, share: students can read and summarize an article or video on the problem-definition process: https://www.ideo.com/datascope/how-to-solve-a-problem-in-3-steps

Content Authors



Mohammad Khalid, a luminary in the field of Computer Science and Assistant Professor at OPF Boys College. Professor Khalid's rich pedigree, boasting an M.Sc. in Computer Science and B.Ed. qualifications, infuses every page of these meticulously crafted textbooks for Grades IX to XII. Collaborating with the prestigious National Book Foundation (NBF), Professor Khalid's work epitomizes innovation, excellence, and pedagogical mastery. Dive into a realm of unparalleled insight, where theoretical depth converges with practical application, propelling students towards digital fluency and technological prowess.



Dr. Saleem Iqbal received both his BS and MS in Computer Science from the COMSATS, Pakistan and PhD from UTM, Malaysia in 2015. He has a diversified experience of over 18 years comprising academic, development, research and administrative. Currently, he is an Associate Professor and Chairman of Computer Science Department at Allama Iqbal Open University. Previously he was with PMAS-Arid Agriculture University Rawalpindi and COMSATS, Islamabad .



Dr. Faraz Ahsan is an Educational and IT Specialist with more than 20 years of experience of both academia and industry. He worked as a Software Engineer and Network Administrator in the industry. Later, he completed his PhD from COMSATS Institute of Information Technology and specialized in the field of Network Security. He is currently associated as Consultant with a USA based firm.



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