

Chapter 1

Introduction

1.1 Product

- Product Definition:
 - Service
 - Item offered for sale
- Form:
 - Physical
 - Virtual or Cyber
- Provide:
 - Problem-solving services
 - Core benefits
- Cost & Price:
 - Market
 - Quality
 - Marketing
 - Segment that is target

1.2 Product Development

- Innovation: To renew, To make new, To alter

- Definition: A successful implementation of
 - * A new or significantly improved product or process
 - * A new marketing method or a new Organizational method
- A creative process ($A + B + \dots \xrightarrow[\text{way}]{\text{novel}}$ Unique new thing)
- Idea \rightarrow Reality
- New inventions $\xrightarrow{\text{Application}}$ Marketable products and services
- Six types of new product:
 - New to world
 - New product lines
 - Additions to existing product lines
 - Improvement and revisions to existing products
 - Re-positionings
 - Cost reductions
- New Product Development: A subprocess of innovation
 - Process: Bussiness Opportunities \rightarrow Tangible product

1.3 Product Failure

- Important: Some ideas are not commercially viable or organizationally appropriate
- Reasons:
 - Lack of innovation
 - Insufficient budget
 - Market misjudgment/demand misunderstanding
 - Lack of management support
 - Lack of customer participation
 - Government policy intervention
 - Misjudgment of market size
 - Mismatch of company capabilities
 - Insufficient channel support

- Listing delay
- Intense competition and countermeasures
- Inefficient organizational communication
- Insufficient investment return
- Sudden change in consumption trend
- Avoid: Process improvements and a structured approach
 - Better requirements capture and management
 - Better planning
 - Better analysis and screening
 - Organization-wide process framework
 - Better execution
- Characteristics of Successful Product Development

Characteristic	Description
Product quality	Affects: Market share & Price
Product Cost	Includes: 1. Spending on capital equipment and tooling 2. Incremental cost Determines: Profit for a sales volume and price
Development time	Determines: 1. Reaction capability 2. The speed of obtaining returns Plan future development times/schedules
Development cost	A significant fraction of the investment required to achieve the profits Plan future budget and resources
Development capability	Determine: Efficiency and economy of product development Reduce cost and time

1.4 Product Development Process

- Definition: A sequence of steps or activities which an enterprise employs to conceive, design, and commercialize a product

- Advantage of having a generic, well-defined process:
 - **Quality assurance:** Specify the wise points and checkpoints (milestone)
 - **Coordination:** Defines the roles of each of the players on the development team
 - **Planning:** Natural milestone in process anchors the schedule of the overall development project
 - **Managment:** Identify possible problem areas by comparing the actual events to the established process
 - **Improvement:** Helps to identify opportunities for improvement
- Phase:
 0. Planning
 - Assessment of technology developments and market objectives
 - Output: Project Mission Statement (specifies the target market for the product, business goals, key assumptions and constraints)
 1. Concept Development
 - Identify the needs of the target market
 - Alternative product concepts are generated and evaluated
 - * Concept: A description of the form, function and features of a product
 - Chose one or more concepts for further development and testing
 - Use evaluation and screening to aid in the selection
 - * A set of specifications, an analysis of competitive products and an economic justification for the project
 2. System-level Design
 - Include: Definition of the product architecture and the decomposition of the product into subsystems and components
 - Output:
 - * A geometric layout of the product
 - * A functional specification of each of the products subsystems
 - * A preliminary process flow diagram for the final assembly process
 3. Detail Design
 - Include: Complete specification of the geometry, materials and tolerances of all the unique parts of the product and any information regarding parts to be purchased from suppliers
 - Output:

- * Control documentation: The drawings or computer files describing the specifications of each of the parts of the product and how it is to be assembled
- Critical issues:
 - * Production cost
 - * Robust performance
- 4. Testing and Refinement
 - Include: The construction and evaluation of multiple preproduction versions of the product
 - Participants: Lead customer & Employee
 - Output: Feedback used to make improvements and adjustments to the products
 - *Alpha test*
- 5. Product ramp-up
 - Purpose: To train the work force and to work out any remaining problems in the production process
 - Participants: Preferred customers
 - *Beta test*
- Decision point:
 - Goal: Reduced cost and Prevent inferior products from entering the market
- Key Departments:
 - Marketing: Mediates the interactions between the firm and its customer
 - Design (R&D): Defining the physical form of the product and how this can best meet customer needs
 - Manufacturing: Design and operation of the production of the product

1.5 Product Development Team

- Members: Representatives from each of these areas
- Made up:
 - Core team: A team leader and one representative from each of the areas involved in all stages
 - Extended team: all of the people involved in the development

Chapter 2

Product and Service Strategies

2.1 Product

- Product Definition: Anything that can be offered to a market for attention, acquisition, use or consumption that might satisfy a want or need
- Includes: Physical objects, Services, Persons, Places, Organizations and Ideas
- Levels of Product:
 1. Core Product: The fundamental benefit or service that the customer gains from the product
 2. Actual Product: The tangible aspects of the product, including design, features, packaging, and branding
 3. Augmented Product: Additional services or benefits that enhance the product's value, such as warranty, customer support, and after-sales service
 - E. Potential Product: Future enhancements or innovations that could be added to the product to meet changing customer needs or market trends
- Product Classification:
 - Consumer Products: Products purchased by final consumers for personal consumption
 - * Convenience Products: Low-priced, frequently purchased items with minimal effort (e.g., groceries)
 - * Shopping Products: Higher-priced items that require comparison shopping (e.g., clothing, electronics)
 - * Specialty Products: Unique items with specific characteristics that consumers actively seek (e.g., luxury cars, designer clothing)

- * Unsought Products: Products that consumers do not think about regularly or may not know about (e.g., life insurance, funeral services)
- Industrial Products: Products purchased for further processing or for use in conducting a business
 - * Materials and Parts: Raw materials and components used in manufacturing (e.g., steel, electronic components)
 - * Capital Items: Long-lasting goods that facilitate the development or production of other products (e.g., machinery, buildings)
 - * Supplies and Services: Operating supplies and services that support the production process (e.g., maintenance supplies, consulting services)
- Other Marketable Entities: Products that do not fit neatly into the above categories but are still marketed

2.2 Product Decisions

- Individual Product Decisions:
 - Product Attributes: Features, quality, design, and packaging that define the product
 - Branding: The name, logo, and image associated with the product
 - Packaging: The design and materials used to contain and protect the product
 - Labeling: Information provided on the product packaging, including instructions, ingredients, and branding
 - Product Support Services: Additional services that enhance the product's value, such as warranties, customer support, and after-sales service
- Product Attribute Decisions:
 - Quality: The overall excellence or superiority of the product, including performance, durability, and reliability
 - Features: Specific characteristics or functionalities that enhance the product's appeal and usability
 - Design: The aesthetic and functional aspects of the product, including its appearance, usability, and ergonomics
- Branding Equity:
 - Association: The connections and perceptions that consumers have with the brand
 - Loyalty: The degree to which consumers consistently choose the brand over competitors

- Credibility: The trustworthiness and reliability of the brand in the eyes of consumers
- Awareness: The extent to which consumers recognize and recall the brand
- Advantage of Brand name:
 - Attributes: The specific features and characteristics associated with the brand
 - Consistency: The reliability and predictability of the brand's performance and quality
 - Quality & Value: The perceived worth and benefits that the brand provides to consumers
 - Identification: The ability of the brand to stand out and be recognized in the market
- Major Branding Decisions:
 - Brand name selection (selection and protection): Choosing a name that resonates with consumers and is legally protected
 - Brand sponsor (manufacturer's brand, private brand, licensed brand, co-brand): Deciding whether to use a manufacturer's brand, a private label, a licensed brand, or a co-branding strategy
 - Brand strategy: Determining how to expand or diversify the brand through line extensions, brand extensions, multibrands, or creating new brands
 - * Line extension: Existing brand name used for a new product in the existing category (e.g., a soft drink brand launching a new flavor)
 - * Brand extension: Using an existing brand name to enter a new product category (e.g., a clothing brand launching a fragrance)
 - * Multibrands: Offering multiple brands within the same product category to target different market segments (e.g., a company offering various detergent brands)
 - * New brands: Creating entirely new brands to enter new markets or product categories (e.g., a tech company launching a new line of smart home devices)
- Packaging:
 - Sale Tasks
 - Competitive Advantages
 - Product Safety
- Labeling:
 - Identifies

- Describes
- Promotes
- Product Support Service:
 1. Survey customers to determine satisfaction with current services and any desired new services
 2. Assess costs of providing desired services
 3. Develop a package of services to delight customers and yield profits
- Product Line Decisions:
- Product Mix Decisions:
- Characteristics of Services:
 - Intangibility: Services cannot be seen, tasted, felt, heard, or smelled before purchase
 - Inseparability: Services are produced and consumed simultaneously, making it difficult to separate the service provider from the service itself
 - Variability: The quality of services can vary significantly depending on who provides them, when, and where
 - Perishability: Services cannot be stored for later use; they are consumed at the time of production
- Marketing Strategies for Service: Firms
 - Managing Service Differentiation: Creating a unique service offering that stands out from competitors
 - Managing Service Quality: Ensuring consistent and high-quality service delivery to meet customer expectations
 - Managing Service Productivity: Balancing service quality with efficiency to maximize profitability

2.3 Product Portfolio Management

- Product Portfolio: The collection of all products and services offered by a company

2.3.1 Product Life Cycle (PLC)

- Product Life Cycle (PLC): The stages a product goes through from introduction to decline
- Stages:
 - Development (R&D + NPD)
 - Introduction/Launch
 - Growth
 - Maturity
 - Saturation
 - Decline/Withdrawal

Introduction Stage

- To do: Advertise and promote the product to create awareness and generate interest
- Monitoring: Initial sales and customer feedback to assess market acceptance
- Goal: Maximize publicity and build a customer base
- Cost: High cost, low sales
- Duration: Depend on type of product

Growth Stage

- Performance: Consumer awareness increases, sales grow rapidly, revenue increases
- Cost: (fixed cost and variable cost) Profit may be made
- To do: Monitoring the market, competitors, and customer feedback to adapt marketing strategies

Maturity Stage

- Performance: Sales peak, market share high, competition intensifies
- Cost: Decline the cost of supporting the product
- To do: Monitoring the market, considering changing strategies to maintain market share

Saturation Stage

- Performance: Supply exceeds demand, sales plateau or decline
- To do: Develop new strategies like searching new markets, modifying the product, or finding new uses for it

Decline Stage

- Performance: Product becomes obsolete or faces significant competition, sales decline sharply
- Due to: Technological advancements, changing consumer preferences, or increased competition

2.3.2 The BCG Matrix

- BCG Matrix: A tool for analyzing a company's product portfolio based on market growth and market share (Boston Consulting Group Matrix)
- Classification:
 - Stars: High market share, high market growth; require significant investment to maintain position
 - Cash Cows: High market share, low market growth; generate steady cash flow with minimal investment
 - Dogs: Low market share, low market growth; may not be worth investing in, often considered for divestment
 - Problem Children (Question Marks): Low market share, high market growth; require careful analysis to determine whether to invest or divest
- Implications:
 - Stars: Invest to maintain leadership and capitalize on growth opportunities
 - Cash Cows: Optimize profitability and use cash flow to support other products
 - Dogs: Consider divesting or repositioning to minimize losses
 - Problem Children: Analyze potential for growth and market share; decide whether to invest or divest

Chapter 3

Innovation Management

3.1 Innovation

- Innovation: The process of translating an idea or invention into a good or service that creates value or for which customers will pay
- Innovation characteristics:
 - Essence: Process from idea generation to commercialization, the adoption of change
 - Radical change in traditional ways vs. incremental change
 - Generate: New device or something new to society
- Understand of innovation:
 - Ideas become reality
 - Turn great ideas into value, prosperity, productivity and well-being
 - Mechanism by which we adapt to new opportunities and challenges
 - Practical application of new inventions into marketable products and services
- Understand of invention: Creation of a new device or process that has never existed before
- Innovation in Product Development:
 - A successful implementation of a new or significantly improved product or process
 - A new marketing method or a new organizational method in business practices, workplace organization or external relations
 - $A + B + \dots \frac{\text{novel}}{\text{way}}$ Unique new thing

3.2 Types of Innovation

- Main Categories:
 - Product Innovation: Introduction of a new or significantly improved good or service
 - Process Innovation: Implementation of a new or significantly improved production or delivery method
- Types of Innovation:
 - Product Innovation
 - Process Innovation
 - Organizational Innovation
 - Marketing Innovation
 - Production Innovation
 - Commercial/Marketing Innovation
 - Service Innovation

Product Innovation

- Innovation → existing products: Enhancing or improving current products to meet changing customer needs or preferences
- Advantages:
 - Increased market share
 - Public relations
 - Enhanced reputation as an innovative company
 - Opportunity to build early customer loyalty
 - Added value
 - Higher price and profitability
 - Competitive advantage

Process Innovation

- Find a more efficiency and effective way to produce, deliver or support a product
- Advantages:
 - Reduced costs

- Improved quality
- More responsive customer service
- Greater flexibility
- Disadvantages:
 - Loss of jobs
 - Need for retraining of workers

3.3 Model of Innovation

- Linear Model:
 - Technology push: R&D → Manufacturing → Marketing → User
 - Market pull: Marketing → R&D → Manufacturing → User
 - Universities & Industry liaison: Science & Technology Base, Technological development, Needs of the market
- Simultaneously Model:
 - R&D ↔ Manufacturing ↔ Marketing
- Interactive Model:
 - Represents the links between the organization and its internal and external linkages with the marketplace and science base
 - Successful Innovators: successfully manage this process

3.4 How to Innovate

- Characteristics:

Organizational Requirements	Characterised by
Growth orientation	A commitment to long-term growth rather than short-term profit
Vigilance	The ability of the organization to be aware of its threats and opportunities
Commitment to technology	The willingness to invest in the long-term development of technology
Acceptance of risks	The willingness to include risky opportunities in a balanced portfolio
Cross-functional cooperation	Mutual respect among individuals and a willingness to work together across functions
Receptivity	The ability to be aware of, to identify and to take effective advantage of externally developed technology
‘slack’	An ability to manage the innovation dilemma and provide room for creativity
Adaptability	A readiness to accept change
Diverse range of skills	A combination of specialisation and diversity of knowledge and skills

Chapter 4

Opportunity Identification

- The 5-steps of Product Planning Process:
 - **Identify opportunities**
 - Evaluate and prioritize projects
 - Allocate resources and plan timing
 - Complete pre-project planning
 - Reflect on the results and the process

4.1 Opportunity

- Definition: An idea for a new product, a hypothesis about how value might be created
- Ansoff's Growth Matrix:

	Current Products	New Products
Current Markets	Market Penetration strategy	Product Development strategy
New Markets	Market Development strategy	Diversification strategy

- Market Penetration Strategy: Focus on increasing sales of existing products in existing markets
- Product Development Strategy: Focus on developing new products for existing markets

- Market Development Strategy: Focus on entering new markets with existing products
- Diversification Strategy: Focus on developing new products for new markets
- Risk: Current < New, Product development > Market penetration
- Opportunity tournaments: A structured process for generating and evaluating new product ideas
 - Advantages:
 - * Generate a large number of ideas
 - * Seek high quality of opportunities generated
 - * Create high variance in the quality of opportunities

4.2 Opportunity Identification

- Ulrich and Eppinger's 6-step process:
 1. Establish a charter
 2. Generate and sense many opportunities
 3. Screen opportunities
 4. Develop promising opportunities
 5. Select exceptional opportunities
 6. Reflect on the results and process