

PERT VS CPM

1. Project Evaluation and Review Technique (PERT) (<https://www.geeksforgeeks.org/project-evaluation-and-review-technique-pert/>) :

PERT is appropriate technique which is used for the projects where the time required or needed to complete different activities are not known. PERT is majorly applied for scheduling, organization and integration of different tasks within a project. It provides the blueprint of project and is efficient technique for project evaluation.

2. Critical Path Method (CPM) (<https://www.geeksforgeeks.org/software-engineering-critical-path-method/>) :

CPM is a technique which is used for the projects where the time needed for completion of project is already known. It is majorly used for determining the approximate time within which a project can be completed. Critical path is the largest path in project management which always provide minimum time taken for completion of project.

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Difference between PERT and CPM :

S.No.	PERT	CPM
1.	PERT is that technique of project management which is used to manage uncertain (i.e., time is not known) activities of any project.	CPM is that technique of project management which is used to manage only certain (i.e., time is known) activities of any project.
2.	It is event oriented technique which means that network is constructed on the basis of event.	It is activity oriented technique which means that network is constructed on the basis of activities.
3.	It is a probability model.	It is a deterministic model.
4.	It majorly focuses on time as meeting time target or estimation of percent completion is more important.	It majorly focuses on Time-cost trade off as minimizing cost is more important.
5.	It is appropriate for high precision time estimation.	It is appropriate for reasonable time estimation.
6.	It has Non-repetitive nature of job.	It has repetitive nature of job.
7.	There is no chance of crashing as there is no certainty of time.	There may be crashing because of certain time boundation.
8.	It doesn't use any dummy activities.	It uses dummy activities for representing sequence of activities.
9.	It is suitable for projects which required research and development.	It is suitable for construction projects.

Corporate Planning process

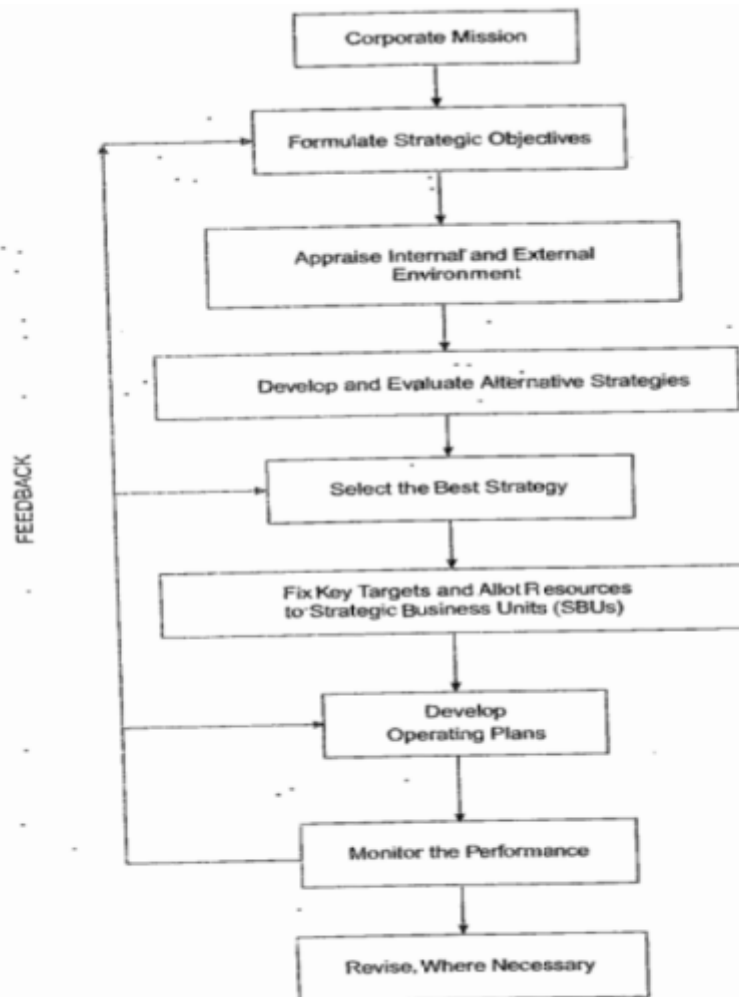


FIGURE 17.1 An Outline of the corporate planning process

SWOT Analysis

- A SWOT analysis is a compilation of your company's strengths, weaknesses, opportunities and threats.
- The primary objective of a SWOT analysis is to help organizations develop a full awareness of all the factors involved in making a business decision.
- Perform a SWOT analysis before you commit to any sort of company action, whether you are exploring new initiatives, revamping internal policies, considering opportunities to pivot or altering a plan midway through its execution.
- Use your SWOT analysis to discover recommendations and strategies, with a focus on leveraging strengths and opportunities to overcome weaknesses and threats.

To run a successful business, you should regularly analyze your processes to ensure you are operating as efficiently as possible. While there are numerous ways to assess your company, one of the most effective methods is to conduct a SWOT analysis.

A SWOT (strengths, weaknesses, opportunities and threats) analysis is a planning process that helps your company overcome challenges and determine what new leads to pursue.

The primary objective of a SWOT analysis is to help organizations develop a full awareness of all the factors involved in [making a business decision](https://www.businessnewsdaily.com/6162-decision-making.html) (<https://www.businessnewsdaily.com/6162-decision-making.html>). This method was created in the 1960s by Albert Humphrey of the Stanford Research Institute, during a study conducted to identify why corporate planning consistently failed. Since its creation, SWOT has become one of the most useful tools for business owners to start and grow their companies.

"It is impossible to accurately map out a small business's future without first evaluating it from all angles, which includes an exhaustive look at all internal and external resources and threats," Bonnie Taylor, chief marketing strategist at CCS Innovations, told Business News Daily. "A SWOT accomplishes this in four straightforward steps that even rookie business owners can understand and embrace."



Free Download: Create your own S.W.O.T. analysis matrix with our [free S.W.O.T. Analysis Template](https://docs.google.com/spreadsheets/d/1eF8_eQmFf4g154Kc9rGCWqAS6xh0l3QEbp1CNbqRRU/edit?usp=sharing)

(https://docs.google.com/spreadsheets/d/1eF8_eQmFf4g154Kc9rGCWqAS6xh0l3QEbp1CNbqRRU/edit?usp=sharing).

When should you perform a SWOT analysis?

You can employ a SWOT analysis before you commit to any sort of company action, whether you are exploring new initiatives, revamping internal policies, considering [opportunities to pivot](https://www.businessnewsdaily.com/5696-pivot-business-strategy-shift.html) (<https://www.businessnewsdaily.com/5696-pivot-business-strategy-shift.html>), or altering a plan midway through its execution. Sometimes it's wise to perform a general SWOT analysis just to check on the current landscape of your business so you can improve business operations as needed. The analysis can show you the key areas where your organization is performing optimally, as well as which operations need adjustment.

Don't make the mistake of thinking about your business operations informally, in hopes that they will all come together cohesively. By taking the time to put together a formal SWOT analysis, you can see the whole picture of your business. From there, you can discover ways to improve or eliminate your company's weaknesses and capitalize on its strengths.

While the business owner should certainly be involved in creating a SWOT analysis, it is often helpful to include other team members in the process. Ask for input from a variety of team members and openly discuss any contributions made. The collective knowledge of the team will allow you to adequately analyze your business from all sides.

Characteristics of a SWOT analysis

A SWOT analysis focuses on the four elements of the acronym, allowing companies to identify the forces influencing a strategy, action or initiative. Knowing these positive and negative elements can help companies more effectively communicate what parts of a plan need to be recognized.

When drafting a SWOT analysis, individuals typically create a table split into four columns to list each impacting element side by side for comparison. Strengths and weaknesses won't typically match listed opportunities and threats verbatim, although they should correlate, since they are ultimately tied together.

Billy Bauer, managing director of Royce Leather, noted that pairing external threats with internal weaknesses can highlight the most serious issues a company faces.

"Once you've identified your risks, you can then decide whether it is most appropriate to eliminate the internal weakness by assigning company resources to fix the problems, or to reduce the external threat by abandoning the threatened area of business and meeting it after strengthening your business," said Bauer.

Internal factors

Strengths (S) and weaknesses (W) refer to internal factors, which are the resources and experience readily available to you.

These are some commonly considered internal factors:

- [Financial resources](https://www.businessnewsdaily.com/5954-smb-finance-management-tips.html) (<https://www.businessnewsdaily.com/5954-smb-finance-management-tips.html>) (funding, sources of income and investment opportunities)
- Physical resources (location, facilities and equipment)
- Human resources (employees, volunteers and target audiences)
- Access to natural resources, [trademarks](https://www.businessnewsdaily.com/15762-how-to-register-trademark-brand-name.html) (<https://www.businessnewsdaily.com/15762-how-to-register-trademark-brand-name.html>), patents and copyrights
- Current processes (employee programs, department hierarchies and software systems - like [CRM Software](https://www.businessnewsdaily.com/7839-best-crm-software.html) (<https://www.businessnewsdaily.com/7839-best-crm-software.html>) and [Accounting Software](https://www.businessnewsdaily.com/7543-best-accounting-software.html) (<https://www.businessnewsdaily.com/7543-best-accounting-software.html>))

External factors

External forces influence and affect every company, organization and individual. Whether these factors are connected directly or indirectly to an opportunity (O) or threat (T), it is important to note and document each one.

External factors are typically things you or your company do not control, such as the following:

- [Market trends](https://www.businessnewsdaily.com/7605-business-trend-predictions.html) (<https://www.businessnewsdaily.com/7605-business-trend-predictions.html>) (new products, technology advancements and shifts in audience needs)
- Economic trends (local, national and international financial trends)
- Funding (donations, legislature and other sources)
- Demographics
- Relationships with suppliers and partners
- Political, environmental and economic regulations

After you create your SWOT framework and fill out your SWOT analysis, you will need to come up with some recommendations and strategies based on the results. Linda Pophal, owner and CEO of consulting firm Strategic Communications, said these strategies should focus on leveraging strengths and opportunities to overcome weaknesses and threats.

"This is actually the area of strategy development where organizations have an opportunity to be most creative and where innovative ideas can emerge, but only if the analysis has been appropriately prepared in the first place," said Pophal.

SWOT analysis example

Bryan Weaver, a partner at Scholefield Construction Law, was heavily involved in creating a SWOT analysis for his firm. He provided Business News Daily with a sample SWOT analysis template and example that was used in the firm's decision to expand its practice to include dispute mediation services. His SWOT matrix included the following:

STRENGTHS

WEAKNESSES

Construction law firm with staff members who are trained in both law and professional engineering/general contracting. Their experience gives a unique advantage.

Small (three employees) – can change and adapt quickly.

No one has been a mediator before or been through any formal mediation training programs.

One staff member has been a part of mediations but not as a neutral party.

OPPORTUNITIES

THREATS

Most commercial construction contracts require mediation. Despite hundreds of mediators in the marketplace, only a few have actual construction experience.

For smaller disputes, mediators don't work as a team, only as individuals; Scholefield staff can offer anyone the advantage of a group of neutrals to evaluate a dispute

Anyone can become a mediator, so other construction law firms could open up their own mediation service as well.

Most potential clients have a negative impression of mediation, because they feel mediators don't understand or care to understand the problem, and rush to resolve it.

Resulting strategy: Take mediation courses to eliminate weaknesses and launch Scholefield Mediation, which uses name recognition with the law firm, and highlights that the firm's construction and construction law experience makes it different.

"Our SWOT analysis forced us to methodically and objectively look at what we had to work with and what the marketplace was offering," Weaver said. "We then crafted our business plan to emphasize the advantages of our strongest features while exploiting opportunities based on marketplace weaknesses."

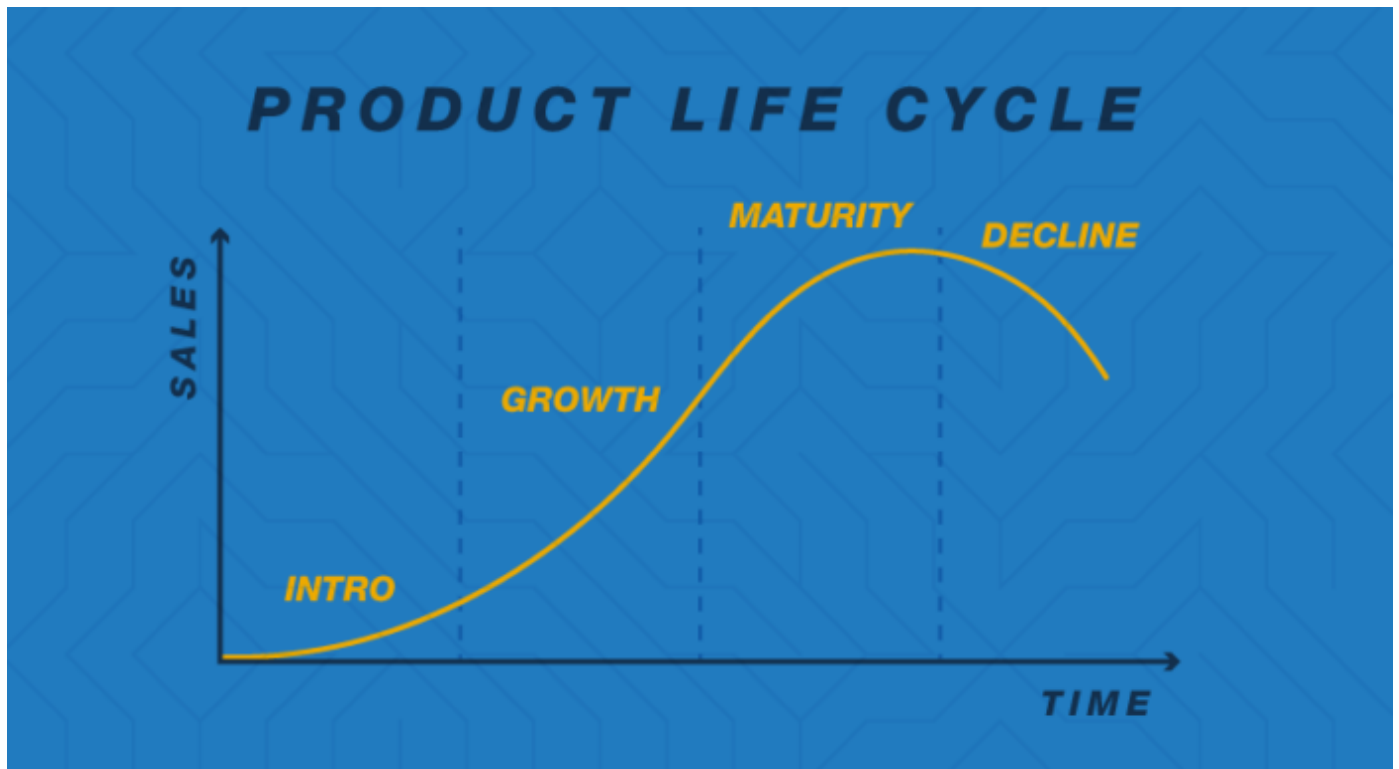
Additional business analysis strategies

The SWOT analysis is a simple but comprehensive strategy for identifying not only the weaknesses and threats of an action plan but also the strengths and opportunities it makes possible. However, a SWOT analysis is just one tool in your business strategy. Additional analytic tools to consider include the PEST analysis (political, economic, social and technological), MOST analysis (mission, objective, strategies and tactics) and SCRS analysis (strategy, current state, requirements and solution).

Consistent business analysis and strategic planning is the best way to keep track of growth, strengths and weaknesses. Use a series of analysis strategies, like SWOT, in your decision-making process to examine and execute strategies in a more balanced, in-depth way.

Additional reporting by Adam C. Uzialko and Nicole Fallon. Some source interviews were conducted for a previous version of this article.

Stages in Product Life Cycle



It's time to explore more deeply the Product Life Cycle model.

Now that we know the stages, we will see what are the characteristics of each of them, and also the best practices to [achieve your marketing goals \(https://neilpatel.com/blog/how-to-create-an-online-marketing-plan-that-will-grow-nearly-any-business/\)](https://neilpatel.com/blog/how-to-create-an-online-marketing-plan-that-will-grow-nearly-any-business/).

1. Development Phase of the Product Life Cycle

Product development is always a very sensitive stage.

The project is still able to be iterated. You can have great expectations for it, but before the product starts generating revenue, you still need to improve your proposal, carry out tests, validate the hypotheses, and make necessary changes.

This stage is naturally integrated into the process of startup companies but is not restricted to them.

For example, an automobile manufacturer does not launch a new car without first having a consistent project and studying its insertion and acceptance in the market.

To present a real example, you might have seen the collection of [leggings for dogs \(https://walkeepaws.com/\)](https://walkeepaws.com/) the Walkee Paws brand released at the end of 2018.



We can imagine that this launch was preceded by careful planning, which resulted in the shape of the pieces, the material used, and the patterns selected.

When a product is in development, it doesn't require sales efforts, but promotion should already have begun.

Imagine the success potential of a marketing campaign from Walkee Paws announcing this novelty to dedicated dog lovers.

It could involve fun posts on social networks, generating curiosity and encouraging engagement.

There may also be [press releases \(https://neilpatel.com/blog/ironclad-rules-for-press/\)](https://neilpatel.com/blog/ironclad-rules-for-press/), billboards, or even interactive actions on the streets, among other types of marketing.

The fact is that the company must consider all this even during the development stage.

2. Introduction Phase of the Product Life Cycle

The Walkee Paws example is about the introduction.

That's when the product goes through all development stages and is considered ready to be launched in the market.

Every day we are introduced to new items in this stage of the cycle.

For big brands, TV is a choice for promotion.

Proof: you only need to turn on the TV for a few minutes to see ads for a new flavor of soda, a different motorcycle model, a smartphone that promises new and superior features, etc.

It is no accident that this stage of the Product Life Cycle is the one that demands the most marketing investment from the company.

In fact, it is not uncommon to get negative financial results at this stage, even if sales have already started.

This is also a result of the production costs related to product distribution.

To reduce the damage, it is imperative to [define the target audience \(https://neilpatel.com/blog/target-audience/\)](https://neilpatel.com/blog/target-audience/) and persona that represents the ideal customer profile for your products.

This exercise makes it possible to optimize your marketing investments, using the right platforms to convey the best message and reach the exact audience you want.

A good practice is to bet on inbound marketing and, by means of relevant content, ensure the user discovers the company and what it offers

This strategy is also how potential consumers are persuaded to confirm sales.

3. Growth Phase of the Product Life Cycle

If the Product Life Cycle works as it should, the next step is the growth stage.

The main characteristics of this stage are scalable sales and the maintenance of [the amounts invested in marketing \(https://neilpatel.com/blog/online-marketing-budget-spending/\)](https://neilpatel.com/blog/online-marketing-budget-spending/).

It is not possible to predict precisely when it happens, because that depends a lot on the details of the product and the market it's in.

But it is worth repeating: if you follow the plan correctly, you are likely to reach your goals even if it takes a while.

So don't get discouraged before you get to the growth stage.

Your investments must continue, either because of expanding your participation in the market or keeping production/output up with your sales rates.

This applies to sales of anything from marketing services, to salespeople training, to physical products.

Many companies fail at this stage and their products' sales decline without having ever experienced maturity.

You might remember a beer brand that made fun tv ads with a short and chubby actor with a mustache as the protagonist.

For a long time, it was one of the leading brands, and the advertisements generated comments in the only social network in existence back then: word-of-mouth.

The product is still in the market, and there is no news of changes to its formula, but it was swallowed by the strong competition that is peculiar to the industry.

Lower investment in marketing would certainly be high in a list of possible reasons for this change.

So the lesson is clear: if a product is in the growth stage, it is important to have a strategy to keep it there even as new competitors start fighting for its audience.

4. Maturity Phase of the Product Life Cycle

Maturity is the peak, the highest point of the Product Life Cycle.

It's when the product reaches its maximum potential and sales stabilize.

Once the summit is reached, it is no longer possible to grow, but the company can act to avoid significant setbacks.

The challenge at this stage is to maintain good results over time.

There isn't a simple way to make this happen.

All the famous brands that come to mind now are where they are today because they invested in this stage.

For example, Coca-Cola doesn't leave the media even though it "doesn't depend on marketing." The company understands that brands are not forever, being subject to market instabilities and behavioral changes in the audience.

Imagine if a competitor developed a new soft drink and people discover that that flavor is essential for their weekend family lunches.

With no visibility, Coca-Cola would lose space in the market, and in that situation, possibly even its place as the leading brand.

5. Decline Phase of the Product Life Cycle

It's interesting to even imagine the end of Coca-Cola, a company with over 100 years of existence and so much financial success.

But even Coca-Cola will end one day. Maybe not the company, but its main product.

This might take 100, 200, or even 1000 years. It's impossible to predict.

But every product reaches the end and concludes its life cycle.

When that happens, the company must recognize the painful truth shown in its [performance indicators](https://neilpatel.com/blog/marketing-kpi-benchmarks/) (<https://neilpatel.com/blog/marketing-kpi-benchmarks/>) and prepare a replacement product.

If everything contributes to the idea of discontinuing the product, investing heavily in marketing to try to revert the situation tends to be too dangerous.

It might work, of course. But what if it doesn't?

The company as a whole, and not just the product, may be endangered.

Why It's Important to Understand the Product Life Cycle

If you've made it this far, you hopefully understand the concept of the Product Life Cycle and the characteristics of each of its stages.

You should also understand why it's important to apply this model to your business.

To eliminate any questions, here are the main advantages and benefits of what adherence to the Product Life Cycle model can do:

- allow decision making with better support
- optimize marketing investments
- qualify sales efforts
- offer more control over results
- give better long term strategic planning
- offer better organization and process management
- provide more longevity for products
- give more appropriate preparation to face competition
- leading the market becomes a feasible goal

Does the Product Life Cycle Only Apply to Products?

This is an interesting question about this tool.

If it were restricted to products, the audience who would be able to make use of it would be much smaller.

On one hand, the idea that the Product Life Cycle works better for physical products is correct considering its characteristics.

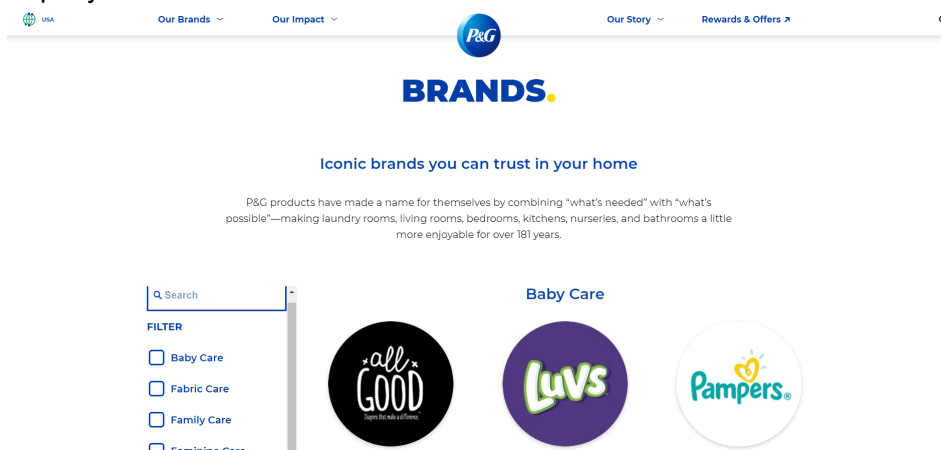
On the other hand, it's possible to be creative and think about adaptations of the model.

Let's take a large company with subsidiaries in different towns as an example.

Each one of these units may be considered a product when applying this Product Life Cycle model; all you have to do is analyze each one's performance individually.

Another example is a company with many brands, each with their own products.

To understand this better, take a look at the Procter & Gamble [website \(https://us.pg.com/brands/\)](https://us.pg.com/brands/), where you will see that the company has several active brands in the USA market.



In which stage of the cycle is each of these brands?

Are they planning new brands that are currently in the development stage?

To conclude, let's look at another example.

Could services replace products in the model proposed by Theodore Levitt?

Depending on the activity the company performs, this is perfectly possible.

Let's think about a home renovation company, for example.

It may offer a great variety of construction services, such as installing floors and tiles, painting, plastering, providing electric and hydraulic works, masonry, and more.

When using the Product Life Cycle method, you can observe the life cycle of each of these services to assess the type of investment each of them requires and the possibilities for returns in each case.

Practical Examples of the Product Life Cycle

How does the Product Life Cycle work in practice, in real cases?

We are going to take a look at two cool examples: Havaianas and Coca-Cola.

The Product Life Cycle of Havaianas



- **Development:** the traditional flip flops were inspired by Japanese sandals made of wood or straw; in Brazil, rubber was selected as the material because it was believed to have the most acceptance with the audience
- **Introduction:** deliberately or not, its introduction in the market was a great success with classes C, D, and E
- **Growth:** Havaianas flip flops were in the growth stage for most of their existence, eventually dominating over 90% of the market for flip flops
- **Maturity:** maturity only came in the '90s, with new product design, aimed at a different audience, and great marketing investment, especially with the now-classic TV ads that were fun and always starred famous actors
- **Decline:** up to this moment, there are no signs that Havaianas flip-flops may go through this stage in the short term

The Product Life Cycle of Coca Cola



- **Development:** very little is known about the development of Coca-Cola and how they created the mysterious formula
- **Introduction:** by 1886, the year of its foundation, the brand already seemed to have the right project
- **Growth:** less than ten years after its launch, Coca-Cola was already consumed in all the U.S. states
- **Maturity:** it's impossible to say exactly when the brand reached maturity, but it's safe to say that it has spent most of its history until now in this stage
- **Decline:** since 2012, the net operating revenue of Coca-Cola has fluctuated towards decreasing; while a small decrease is within what's expected for the maturity stage, investments in marketing and new products

must continue

Product Life Cycle Vs. BCG Matrix

A product is born, grows, declines, and dies.

Isn't this model the same as that of the [BCG Matrix \(https://www.bcg.com/about/our-history/growth-share-matrix\)](https://www.bcg.com/about/our-history/growth-share-matrix)?

If you thought of that, you were very astute.

The BCG Matrix is another amazing management tool, created by the Boston Consulting Group (the model is named after their initials).

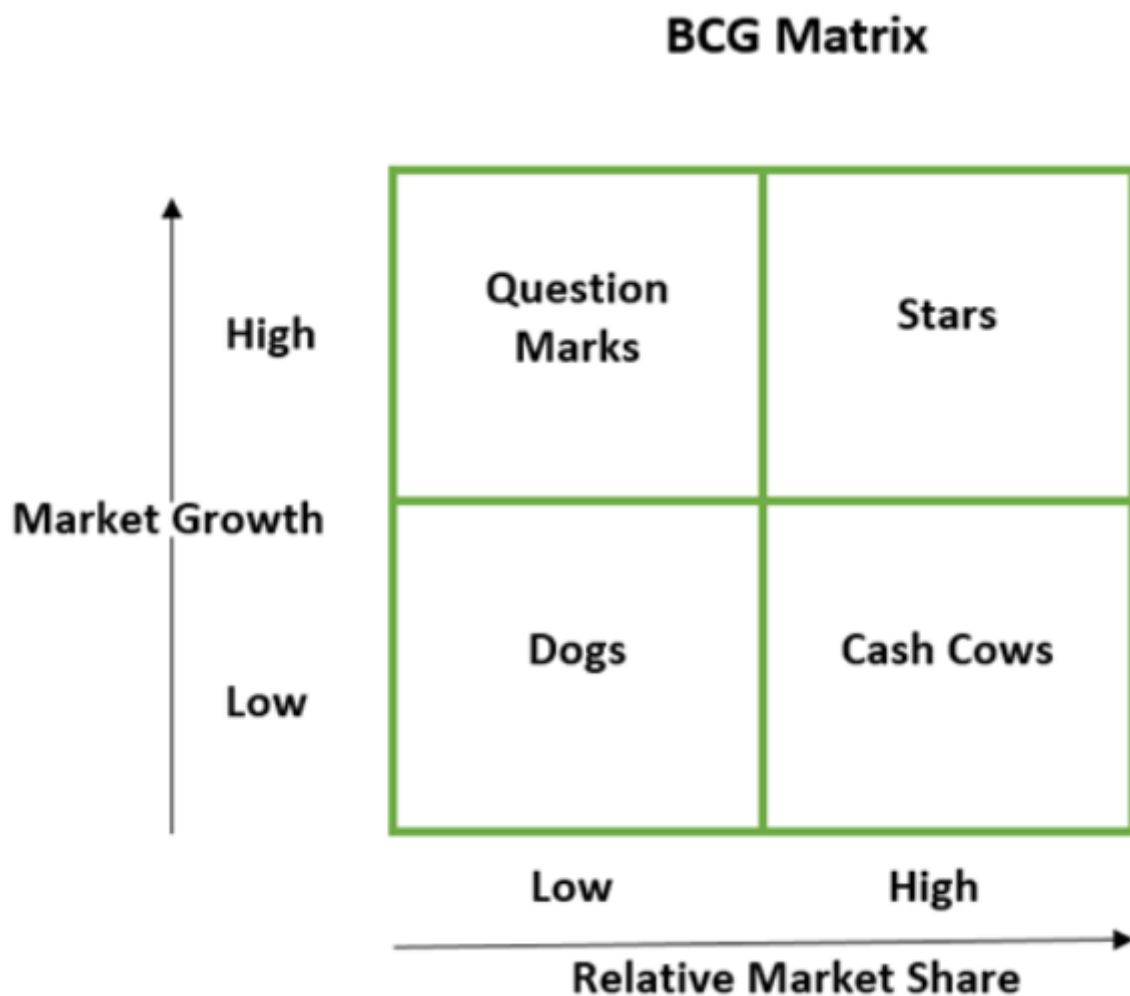
The BCG Matrix is very similar to the Product Life Cycle, though there are some differences.

First, there are four instead of five stages: Question Mark, Star, Cash Cow, and Dog.

Second: these curious names relate to specific characteristics of the stage in which the product is, not necessarily analyzing the entire life cycle.

Are you confused? I'll explain.

Take a look at the table below:



Steps in Constructing Network

Construction of network:

Rules for constructing network

For the construction of a network, generally, the following rules are followed:

- (i) Each activity is represented by one and only one arrow.(i.e) only one activity can connect any two nodes.
- (ii) No two activities can be identified by the same head and tail events.
- (iii) Nodes are numbered to identify an activity uniquely. Tail node (starting point) should be lower than the head node (end point) of an activity.
- (iv) Arrows should not cross each other.
- (v) Arrows should be kept straight and not curved or bent.
- (vi) Every node must have atleast one activity preceding it and atleast one activity following it except for the node at the beginning and at the end of the network.

Numbering the Events

After the network is drawn in a logical sequence, every event is assigned a number. The number sequence must be such as to reflect the flow of the network. In event numbering, the following rules should be observed:

- (i) Event numbers should be unique.
- (ii) Event numbering should be carried out on a sequential basis from left to right.
- (iii) The initial event is numbered 0 or 1.
- (iv) The head of an arrow should always bear a number higher than the one assigned at the tail of the arrow.
- (v) Gap should be left in the sequence of event numbering to accommodate subsequent inclusion of activities, if necessary.

Remark: The above procedure of assigning numbers to various events of a network is known as **Fulkerson's Rule**.

Example 10.9

Draw the logic network for the following:

Activities C and D both follow A , activity E follows C , activity F follows D , activity E and F precedes B.

Solution:

The required network for the above information.

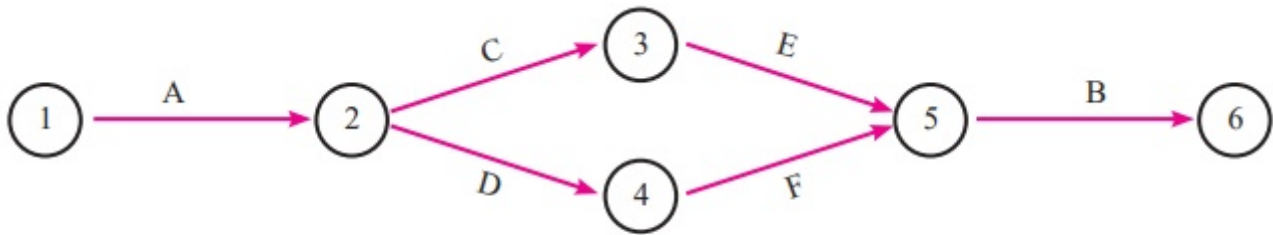


Fig 10.5

Example 10.10

Develop a network based on the following information:

Activity :	A	B	C	D	E	F	G	H
Immediate predecessor:	-	-	A	B	C,D	C,D	E	F

Solution:

Using the immediate precedence relationships and following the rules of network construction, the required network is shown in following figure

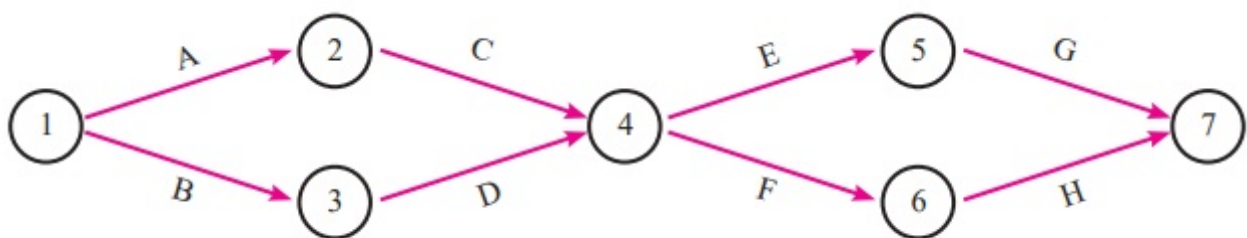


Fig 10.6

Dummy activity:

An activity which does not consume any resource or time, but merely depict the technological dependence is called a dummy activity. It is represented by dotted lines.

Example 10.11

Draw a network diagram for the project whose activities and their predecessor relationships are given below:

Activity :	A	B	C	D	E	F	G	H	I	J	K
Predecessor activity:	-	-	-	A	B	B	C	D	F	H,I	E,G

Solution:

Using the precedence relationships and following the rules of network construction, the required network diagram is shown in following figure

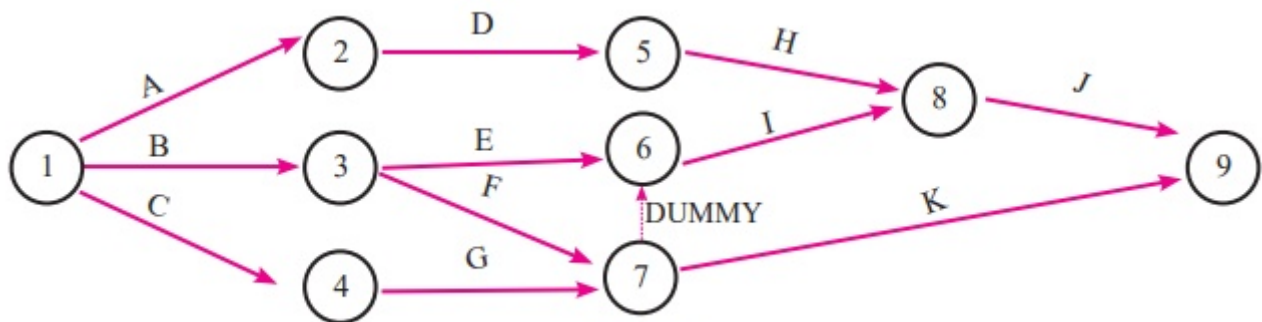


Fig 10.7

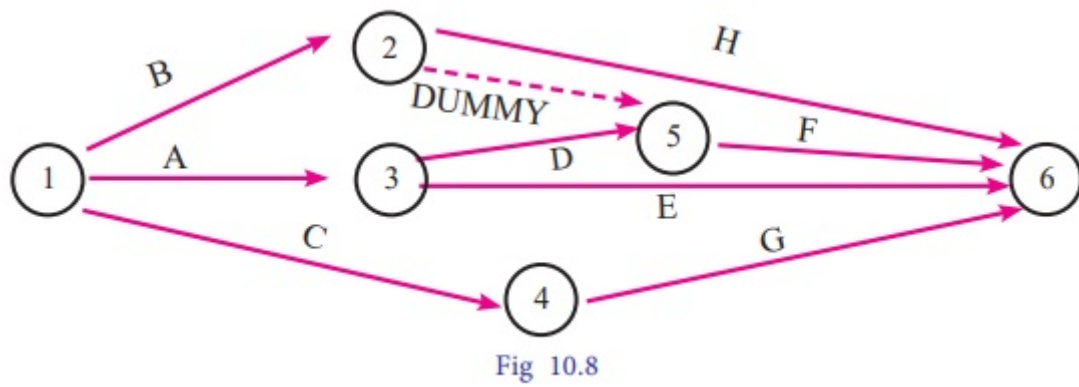
Example 10.12

Construct a network diagram for the following situation:

$A < D, E$; $B, D < F$; $C < G$ and $B < H$.

Solution:

Using the precedence relationships and following the rules of network construction, the required network is shown in following figure



In []:

1