

Functional Analysis



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Function

- Value engineering defines Function as that which makes a product work or sell.
- Function is certainly the end result or action desired by customer.
- Customer wants a function to be achieved reliably, efficiently and effectively by product or service.

Function

Questions helps to achieve a function

- What is the purpose of the product?
- What does it cost?
- What is it worth?
- What alternative would do the same job?
- Is it exactly what it does for the customer?

Function

- Project or product is evaluated by identifying the function in two words:-
Verb and *Noun*
- Verb:- Describes the specific action to achieve intended purpose

Noun:- Defines the object onto which the action operates
- Example:- An electrical cable has function of *Conducting Current*
Conduct:- verb
Current:- noun

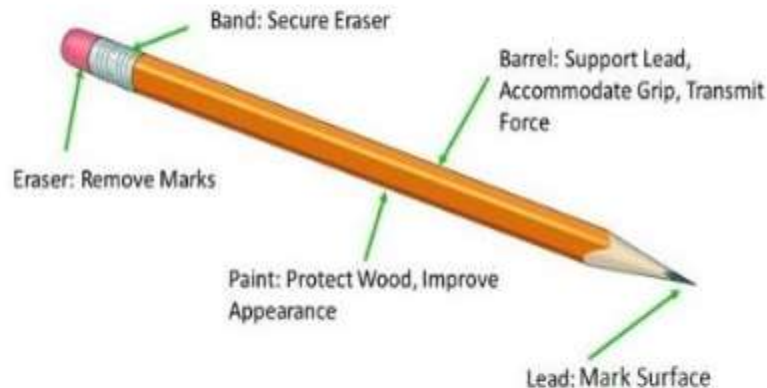
Types of value in terms of function of product

- ***Use value***:- value received from the performance of product
- ***Esteem value***:- aesthetics and appeal of product
- ***Exchange value***:- amount accepted in trade for an item.
- ***Cost value***:- money incurred to produce an item.

Functional Analysis Phase

- **Function Analysis is a technique used to identify and understand the needs of the project, product or service, (what does it do, what must it do).**
- **Function Analysis supports creative problem solving by moving the focus away from the expected solution and placing the focus on the required performance or need.**

Pencil: Mark Surface



Types of function

Primary function

- Basic functions
- Cannot be changed

Example

- Boil water
- Pour water safely



Secondary function

- Supporting functions
- Can be modified or eliminated
- Indicate level of water
- Cordless
- Water filtration
- Power indication

Types of function

Primary function

- Make phone calls
- Send text message
- Portability



Secondary function

- Camera
- Take/play video
- Social networking
- Games
- Internet
- Apps

Function Analysis

Parts	Function	Basic	Secondary
Foundation	Support load Resist load Transfer load	B	S S
Anchor bolts	Transfer load Hold pole	B	S
Base	Hold pole Support pole Cover bolts	B	S S
Extension Arm	Hold fixture Spread light Protect wire	B	S S



Function Analysis

Parts	Function	Basic	Secondary
Housing (fixture)	Holds bulb	B	
	Transfers elec.		S
	Diffuses light	B	
	Reflects light		S
Light bulb	Produces light	B	
	Dissipates light		S

Steps to Perform Function Analysis

- **Random function identification**
- **Functional Analysis System Technique or FAST Diagramming**
- **Cost to Function Relationships**
- **Identify the functions that have the best opportunity to improve value.**

Random function identification

- It is beginning of the function analysis phase.
- Randomly determining verb-noun combinations that describe the functions of the project under study.
- Listing the function of entire product and identifying basic function.
- Then Bill of Material (BOM) of each component is prepared and identify the function or functions of each and every part in the BOM.



Reference

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2. Stephen C. Armstrong (2005), Engineering and Product development Management– The Holostic Approach, Cambridge University Press, ISBN: 978-0-521-01774-9.
3. IbrahimZeid (2006), Mastering CAD/CAM, 2nd Edition, Tata McGraw-Hill, ISBN: 978-0-070-63434-3.
4. [Anoop Desai](#), [Anil Mital](#) and [Anand Subramanian](#) (2007), Product Development: A Structured Approach to Consumer Product Development, Design, and Manufacture, 1st Edition, Butterworth-Heinemann, ISBN: 978-0-750-68309-8.

The logo of Galgotias University is a stylized 'G' composed of three curved, overlapping bands. The top band is yellow, the middle is light blue, and the bottom is light red. The logo is centered in the upper half of the slide.

Thank You

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