**THE STRATEGIC DECISION OF PRODUCT DESIGN**

More than ten years ago, Nokia (designers of some of the most robust and well-known wireless phones of the last two decades) introduced what should have been a tremendous hit: a mobile phone that was also a gaming platform. The result was one of the most epic disasters in the history of design.

It was called the “N-gage.” It was ugly (many users said it “looked like a Taco”), the phone buttons were poorly suited to gaming, and it suffered other design issues. For example, to change games, you actually had to remove the phone’s battery. Nokia subsequently redesigned the N-gage, but the damage was done. The phone was discontinued in 2005, a commercial failure that is frequently cited as one of product design’s most glaring examples of what not to do.

Throughout most of history, design was a process applied to physical objects, from buildings and vehicles to phones and computers.

Raymond Loewy designed trains, Frank Lloyd Wright designed houses, Charles Eames designed furniture, Coco Chanel design haute couture, Paul Rand designed logos, and David Kelley designed products, including (most famously) the mouse for the Apple computer.(1)

Today, design encompasses not just physical objects, but also intangibles such as services and the user experience. Design is one of the ten strategic decision areas in Operations Management. Decisions made in the selection, definition, and design of goods and services can, do, and will have significant impact on the competitive position of a business entity.

**COMPETING ON DIFFERENTIATION, COST LEADERSHIP, AND RESPONSE**

For convenience, we will use the term “product” throughout this lesson to refer to both goods and services. In the context of Operations Management, product design should support the competitive priorities of the company. These priorities may be based on *differentiation*, *cost leadership* or *response*.

* **Differentiation** focuses on setting the company’s product or service apart from competitors based on factors other than cost, such as quality.
* **Cost leadership** means striving to achieve the lowest operational cost possible in order to position your company for competitive advantage.
* **Response** means operating a business entity in a way that leaves it flexible to respond quickly to changes in customer demand.

For example, Taco Bell has developed and executed a *low-cost strategy* through product design, offering very low cost food. The restaurant’s menu changes from time to time, but overall it offers much the same food now as it did several years ago. By contrast, automobile manufacturer Toyota prides itself on *rapid response* to changing consumer demand by executing the fastest automobile design in the industry.

**THE RIGHT FEATURES, FREE FROM DEFECTS**

Product design decisions should result in providing the **right features** to customers, **free from deficiencies**. The right features are what customers want and for which customers are willing to pay. These features function as planned without defects (a concept derived from the teachings of the late quality guru, Dr. Joseph M. Juran). Whether you are selling a Rolls-Royce or a Kia, whether you are a Ritz-Carlton or a Motel 6, this definition holds the key to your company’s success.

In a 2015 HBR interview, Indra Nooyi, CEO of PepsiCo, explained that a well-designed product is one you fall in love with. “We had to rethink the entire experience,” she explained, “from conception to what’s on the shelf to the post-product experience.” She went on to add, “In the past, user experience wasn’t part of our lexicon. Focusing on crunch, taste, and everything else now pushes us to rethink shape, packaging, form, and function... We’re forcing the design thinking way back in the supply chain.”(2)

In order to provide the right features, the ones with which customers will fall in love, a business must know what customers want. Previously, you learned about Six Sigma and the design methodology DMADV. One of the first steps in DMADV is to understand the Voice of the Customer (VOC). You must also determine the true needs and expectations of your target customers, then translate those needs into the design.

**QUALITY FUNCTION DEPLOYMENT (QFD)**

A process that is widely used to translate customer needs into critical to quality (CTQ) functions and features of the product is *Quality Function Deployment* (QFD). QFD is a planning tool or process for determining customer requirements. It enables business leaders to translate these attributes into attributes each functional area can understand— and on which they can act.

QFD ensures that the customer has a voice in the design specification of a product. Many design efforts, including DMADV projects, use the planning matrices adapted from QFD. The flow of these design matrices is as follows:

1. Customers to needs
2. Needs to CTQs (critical-to-quality requirements)
3. CTQs to functions needed to satisfy those CTQs
4. Functions to features that enable those functions
5. Features to processes capable of delivering on those features

**MANAGEMENT IMPLICATIONS**

Product design is a strategic decision. It drives and impacts the entire value chain of the company, including company operations and the business entity’s supply chain. The right design can ensure the success of a product, while the wrong design will surely mean its failure.

Poor design choices lead to poorly designed products. These will not be products that consumers want; they will not be goods and services for which your customers will be willing to pay. To avoid the early or otherwise untimely demise of your company, and to properly position yourself and your business for competitive advantage, you must concern yourself with proper design. Only in this way can you and your business *win*.

***Footnotes:***

1. “Design for Action” by Tim Brown and Roger Martin, Harvard Business Review, September 2015.
2. “How Indra Nooyi turned Design Thinking into Strategy”, an interview by Adi Ignatius, Harvard Business Review, September 2015.