

"I live for the fun of identifying needs and designing products that help people," an industrial designer was quoted in a local newspaper.

In retirement, his is a one-man consultant-prototyping-manufacturing-packaging business that makes portable desks (about 15" x 12" desktop dimension) that either mount on a suitcase, sit on the accessory tripod legs, or fits over the child seat space of a grocery cart, depending on the model.

He said he got the idea from his own experience as well as other business travelers in airports who juggle their laptop computers, mobile phones, and work papers, while their expensive roller suitcase sits idle.



He made sure each model offers at least two features such as a swing-out document holder, tilting desktop angle, telescoping attachment legs, security straps for laptop, etc.

The product sounds interesting and they might find useful applications. But we are not sure what "needs" this inventor has identified.

Converting an existing infrastructure such as a suitcase or grocery cart into a portable computer desktop with tilting desk angle, adjustable height, swing-out document holder, etc. are not the customer needs. They are product features and functions. They describe what the product is or does, but not "why" the customer would want it.

According to the new ISO 16355 for QFD, new product development should begin with identifying the **true customer needs**. The standard is now online [here](#). We also shared the outlines in the [previous newsletter](#).

When you begin new product development with a product feature, such



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as 'fits on a grocery cart,' you may make an elegant design. But will the product sell?

QFD has the tools to help us ask customers what problems or missed opportunities the feature would address, which are the true customer needs. Then we can determine which customer segments have these needs (grocery shoppers who must do work that cannot be done on a smart phone or tablet), how large is the market (1 person?), and how big a problem is this solving so we know how to price it (let's see - 'my urgent report to my boss is less important than making dinner, so I must type while I shop. This is worth \$5 maximum each time it happens which is almost never,' for example).

Actually, this is what we call "Reverse-QFD" and it is useful when we have a concept and we want it to be successful. This is discussed in part 5 of the standard, ISO 16355-5.

"Forward-QFD", the typical customer-driven approach, would be preferred. If I were this craftsman, I would start with my ability to make office furniture type products. I would then look around for a niche where there is little competition. Computer desks for road warriors, for example.

I would then do a [gemba](#) (site) visit to airports to watch road warriors in action. I might notice that real road warriors spend their airport layover time in airline lounges with real desks and power outlets. I might notice their carry-on bags are small and light to enable fast boarding and deplaning, so they do not want a large, heavy, or complicated device for a portable computer desk. I might notice they all have smart phones so they can communicate with one hand during brief downtime while they wait for the boarding process.

In other words, I might see that the very customer who would spend hundreds of dollars for a custom-built traveling computer desk might actually not want one because they require too much work and time to set up and take down and store, they are too heavy and bulky for hand luggage, and if I have real computer work to do, I can use the airline lounge or a restaurant table near my gate. In other words - no sale.

Let's follow the customer needs, however.

1. I need to do typing work while waiting to board plane.
2. I need to do mouse work while waiting to board plane.
3. I need a place for my computer.
4. I need a place to spread my papers.
5. I can watch movies on my computer.

6. My computer is safe even if bumped.
7. I need to use even in crowded waiting area seats.
8. I need to use even if I am standing up.
9. I need to be able to board right way.
10. My hand luggage fits in small commuter plane overhead bins.
11. My hand luggage fits under small commuter plane seats, etc.

After these customer needs are elicited using the **customer voice table**, a statistically valid sample of customers can be asked to prioritize them using the analytic hierarchy process. This is explained in part 4 of the standard (ISO 16355-4).

Then, using the **maximum value table** or house of quality, the prioritized needs can be transferred into product functional requirements such as open dimensions, collapsed dimensions, weight, angles, balance, vibration resistance, fold-ability, durability, adjust-ability, and then into *more innovative* designs. This is explained in part 5 of the standard (ISO 16355-5).

Following design, would be materials, build, and other commercialization issues needed to assure customer satisfaction. This is explained in part 8 of the standard (ISO 16355-8).

A quick internet search brings up designs with lots of utility as well as failures and damage.

Can you make a better product? Prioritize the above customer needs for yourself or a colleague. Transfer into functional requirements and then into a better product.

Let us know what happens!

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