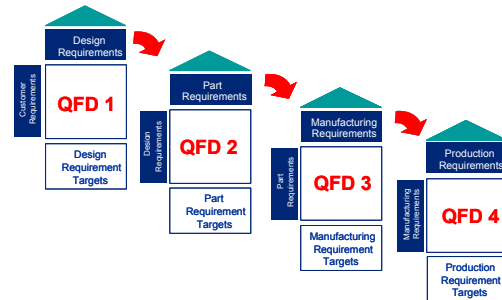


Quality Function Deployment: What's the problem?

by Dr Phil Rowe, Six Sigma Group



QFD has been around a long time – it was used in the ship-building industry in 1960's Japan. Most people in the Quality business have heard of it and many texts extol its benefits – in *theory*.

In fact, its name is also part of its problem . . . the word 'Quality' in Quality Function Deployment has all too often meant that some poor soul in the Quality department is lumbered with owning it! QFD should really be called 'Customer Driven Working' or something along those lines. (The fact that someone in Marketing may then end up owning it would not be such a bad thing! More often than not, however, the responsibility for QFD sits with Design these days, since designers are increasingly taking on whole life cycle responsibilities.)

Another reason why QFD ownership is tending to sit with Design is that QFD is seen as an essential ingredient of Design for Six Sigma (DFSS) methodologies (such as IDOV and DMADV).

Classically, there are four 'Houses of Quality' in QFD:

QFD1	Customer domain
QFD2	Functional domain
QFD3	Design domain
QFD4	Process domain

It is the role of QFD to help manage the process of conversion of customer requirements into process controls which guarantee their fulfilment.

The four Houses of Quality are intended to break this lengthy (in elapsed time at least) and complex process into bite-sized logical chunks. There are, however, very few examples – successful or otherwise – of application of QFD which follow all four Houses of Quality to completion.

People often say 'We already have a new product development (NPD) process. Isn't QFD just another faddish tool which does the same thing?' Although interwoven, QFD and the NPD process are not the same thing; the end product is intended to be the same but QFD works within the NPD process to produce a **quality outcome**. The NPD process is usually a series of deliverables and phase gates – it doesn't actually HELP you get there, whereas QFD does – in as complete and consistent a way as possible.

More often than not people 'customise' the QFD process, but beware '**short cuts make for long delays**'. In other words don't attempt to take short cuts when you don't know what you're doing in the first place; you'll only end up worse off.

For example, QFD1 is often omitted altogether due to a feeling that 'we know what the customer wants already; we've been doing this kind of thing for ages'. In this case QFD reduces to merely drilling a 'known' high level design concept into low level technical design parameters.

Often, this is where QFD ends and people who have participated end up feeling a bit cheated – feeling like they have wasted a lot of their time because ‘we ended up with what we would have got without QFD’. Of course they did! Once something like this happens it will be difficult to rekindle enthusiasm for QFD within an organisation.

To get the full value from QFD, organisations must be geared to enabling QFD to happen as a *routine* way of developing and managing a design throughout its whole lifecycle. A ‘QFD’ then, is not a discrete event – or even several discrete events – but an ongoing evolving set of interdependent requirements at lower and lower level within a new product or process. Appropriate organisational infrastructure for QFD is by no means a trivial requirement, but it’s absolutely key to success.

There is so much pressure to reduce design cycle times these days that any significant amounts of time spent ‘hugging trees’ in teams is looked on by those outside with scorn. QFD takes a ‘long time’ – because the new product development process takes a long time. Recognise also that using QFD as the vehicle to manage Voice of the Customer ‘flow down’ will take you longer than the process you go through presently **first time around** because it’s NEW and more rigorous. The end result, however, will be more robust – leading to fewer redesigns! (Having been through QFD once the next iteration will be significantly easier and quicker; particularly the QFD1 Phase.)

It must also be recognised that the approach to collecting the Voice of the Customer for QFD1 depends upon the type of market an organisation is in. In a broad market, like automobile production or banking, the customer base is diverse and segmented. In a narrow market, like jet engine manufacture, the customer requirements are often very specific and written down in detail, even to the extent of specification of aspects of the design itself.

To realise that there is benefit in gathering and/or querying customer requirements one only has to think of the Kano model (see any decent text on the subject of customer requirements); customers only express a fraction of their actual requirements – sometimes a small fraction and sometimes a large fraction, but a fraction nonetheless. There are other requirements which are just as important but which may be ‘understood’ (like having towels in your hotel room) or which are not even considered by the customer but may nonetheless lead to delight (such as a take-away curry hook in your car).

Gathering the Voice of the Customer is not easy, but if you intend to ‘do’ QFD then it is vital, since by definition all that follows is geared towards fulfilling these requirements!

Another weak point in the application of QFD is jumping straight to design solutions rather than thinking first about what the design has to **DO** – i.e. teams tend to miss the functional domain out.

If one looks at it from the functional perspective there is the possibility for innovation; a pen is one design solution to a customer need for producing information in a readable format with a hand-held portable device. It’s not the only solution, but a pen manufacturing company will always believe this unless they open their mind to other ways to meet the same functionality.

This brings us to another aspect of QFD that determines its success – QFD requires the use of other tools in order to make it a logical process. Teams can (and do) get terribly confused when completing a House of Quality due to not knowing where to put things!

Did you know, for example, that there are at least 4 types of customer requirement:

- Functional
- Non-functional Performance
- Non-functional System and
- Non-functional Implementation

Not being able to differentiate between these can lead to severe problems in completing a QFD1 and QFD2 chart. Also, customers don't usually talk in terms of functionality at all; we need to elicit or infer this. Tools exist which are used around QFD to help you to do it properly.

Proper guidance, therefore, is an absolute **MUST** for any organisation contemplating QFD as a tool to help with new product or process design.

Yet another problem in doing QFD properly is the fact that it requires involvement from a very wide range of people – at different times. For example, in a product manufacturing environment, manufacturing personnel should be involved with the QFD activities from Day 1; getting more and more heavily involved as the design concepts progress. The trouble is that 'downstream' departments often don't see this as 'their job', which is a shame because doing QFD gives everyone an excellent opportunity to contribute to a design which will be less work for themselves in the long run; manufacturing will be able to influence technologies and tolerances required for components for example. In a transactional environment, help desk operatives will be able to influence the way in which information is laid out or accessed.

If the QFD process ends in the design domain, then those downstream of the process will not feel any difference or any benefit from QFD; it has to go down to the process control level in order that we can be confident that the customer requirements captured in QFD1 are truly being met consistently; QFD 3 and QFD 4 give us that security and that traceability.

QFD doesn't tell you HOW to do anything – it doesn't tell you how to collect Voice of the Customer data; it doesn't tell you how to design anything or what process to use or how to control it. QFD helps manage these things in a consistent and self-consistent way – it shouldn't be that difficult really!

The problem is . . . ignorance.

Ignorance in what QFD really is and what is needed to make it work. Without this knowledge it is highly unlikely that there will be the right environment for QFD to be applied fully or properly.

If you are thinking of 'doing' QFD get an expert in to discuss it first!

QFD works if done properly, but causes frustration, lost time and disillusionment if done badly.

