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Podcast Transcription

Implementing Lean Marketing Systems

Finding the Voice of Customer in Design for Six Sigma

Guest was Dr. Kai Yang world - wide known expert in the area of Six Sigma, Design for Six Sigma and Quality for Service . Dr. Yang is an author of five books .

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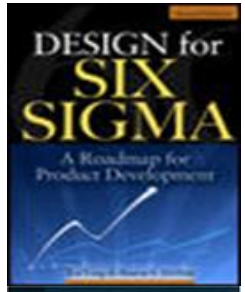
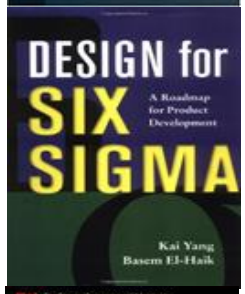
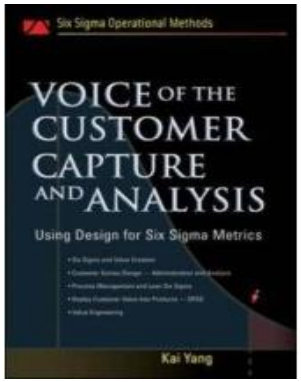
Dr. Kai Yang is a Professor in the department of Industrial and Manufacturing, Wayne State University. His areas of expertise include Six Sigma, statistical methods in quality and reliability engineering, lean product development, lean healthcare, and engineering design methodologies. He is a world well known expert in the area of Six Sigma, Design for Six Sigma and quality for service and author of five books in the areas of Design for Six Sigma, Six Sigma and, multivariate statistical methods.

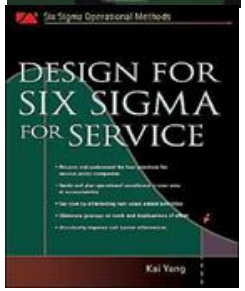
Prof. Yang's book, Design for Six Sigma: A Product Development is an influential book that provides a framework to integrate both innovation methods, and traditional statistical quality assurance methods into the product development process. Dr Yang also published over 70 research papers.







He has been awarded over 40 research contracts from such institutions as US National Science Foundation, US Department of Veteran Affairs, Siemens Corp, General Motors Corporation, Ford Motor Company, Chrysler Corporation and Siemens Corporation. Dr Yang is also a well-known trainer in the area of Six Sigma, lean, he conducted numerous training for many *companies, such as Apple Inc and Siemens. Dr. Yang obtained* both his MS and PhD degrees from the University of Michigan.



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Joe Dager: Thanks everyone for joi ning us. This is Joe Dager, the host of the Business 901 podcast. Participating in the program today is Dr. Kai Yang, a professor in the Department of Industrial and Manufacturing at Wayne State University. He is a well -known expert in the area of Six Sigma, design of Six Sigma, and quality for service and author of five books in the areas of design for Six Sigma. Dr. Yang, could you tell me about your position and w hat you do at Wayne State?

Kai Yang: I'm a full professor in the department. I have been working with product development for a long time. Since I joined the University, because I'm in Detroit, very soon I started working with automobile companies such as General Motors, Ford and Chrysler. So, first we helped them to do some of the project improving the manufacturing qualities. Then later on, I worked with a quality reliability group and did a lot of projects based on my experience, and also based on the r esearch. I thought about writing some of the books which reflect my experience. In the year 2000, the book publisher asked me to write Design for Six Sigma. The feature of my book is linking the quality methods and the innovation methods and the design met hods all together . So, compared to the past quality book, I didn't do problem solving, I didn't do design, I didn't do the QFD. Of course, some of the traditional quality items such as design of experiment, Taguchi method, tolerance of design. So, this is a comprehensive book. After the book was published , very quickly it became number one in this category. Many companies, such as Lockheed Martin , Delphi, GM, they bought a lot of my books as their training material. Also, I helped many company to do the tra ining product development, including some famous companies such as Apple Computer, Siemens. So, I'm really happy with my experience, the feedback I got from my book s. I also like the idea of product development. I think it's very important. Recently, we

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th ink the reliability quality in the auto industry is really important. So, I'm happy to share my experience and my expertise with your guys.

Joe Dager: One of the things that struck me very quickly as I was reading you Bio was that you trained and worked with A pple . I t was interesting because I think everybody looks at Apple , their blue jean guys, kind of loose and everything. Are they that statistical driven that they use Six Sigma?

Kai Yang: Well, I think they don't call their approach Six Sigma because they think GE is inefficient, too complex, very slow. However, recently, they are really interested in learning, implementing some of the quality tools. I did training in quality myself. I did training in brainstorming. I did training for especially design of e xperiment. And they have done a lot of DOE to improve their quality, improve the appearance of the product. So, they're happy with that.

Joe Dager: Six Sigma and even somewhat Design for Six Sigma was a field ; Jack Walsh popularized in the early 90's. But recently, I think Six Sigma is getting kind of a rebirth, because of the amount of statistics and things that we're seeing nowadays. Especially with the cashless society that everything's on a credit card or on the Internet, that there's so many statisti cs; what statistics to look at and which ones to use . I think very much appl ies to Six Sigma. Do you believe that Six Sigma is kind of resurfacing again and getting stronger?

Kai Yang: Well, I think that might be true, even in a service industry. Recently, I have done a lot of work for the health care industry. I find amazingly, in my experience, they

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have a lot of data available in their IT system. They call it medical informatics. However, they are not like manufacturing. They do n ôknow how their process wo rks. So, we don't even know, for example, a duplicated task. Some people say that three trillion dollars of the US healthcare industry, half of them are waste. I believe that. When you dig in the data , and you know that math weighs their process, you really find how the process works. You can do a lot of improvement s through that. So, I do think data mining statistics, then linked with industrial engineering Lean, will do a lot of good for all kind of industries.

Joe Dager: Most of your books are written bas ed on Six Sigma, Design for Six Sigma, and Design for Six Sigma service. How does Lean play a role in your training methods? Do you use Lean in conjunction with Six Sigma?

Kai Yang: If you notice my new edition of my Design for Six Sigma book, I purposely added the Lean operation in general. Also, I'm adding the Lean product development. This is very important. The tradition of Six Sigma statistical mass innovation method is about incr easing your value of your product and services by improving quality, by being more creative. But , on the other hand, you need to reduce your calls. You need to be more flexible, responsive to market. Reducing the product developing time, increasing efficien cy, increasing operation efficiency is so important. Definitely Lean is very, very important. Actually, I share some our experiences. We recently worked with Siemens, and working with their team, we are able to reduce the product developed over time by big margin. They are really happy with it. The Lean and the Six Sigma is complementary; they go together. They are not contradicting each other. I think they work well side by side.

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Joe Dager: One of the great strengths of Six Sigma and Design for Six Sigma is the tools of V oice of Customer, Voice of Market, and C apture and Analysis Stage . I really don't know of a better set of tools than Six Sigma in obtaining that information. Why did you choose to write about these?

Kai Yang: Well, when I started to writ e a book on design for Six Sigma -- they also had a lot of information, there were a lot of things going on in Voice of Customer, such as Quality Function Deployment, such as getting the Voice of Customer information. But many of these available books and the training do not have a systematic way of obtaining the real customer voice. So, in my recent book, 'Voice of the Customer,' I added in a lot of new -- well not really new -- but kind of a popular emerging message, such as over - serving the customer in their work environment, in their living environment. Live with the customer's own life to observe a very objective Voice of Customer information. I think Toyota also uses this in some way.

The other thing is after you're getting all kinds of information, how t o process it, how to get meaningful information so you can guide engineers. For example, a customer may say, 'Well, I want a car which drives fast, which saves gas.' So, this the voice of customer. But you cannot use it to guide your design because the eng ineer will ask you, 'What do you mean by saving gas? What mileage per gallon?' They want to have some specific numbers as guidance . So, my new book 'Voice of the Customer,' really talks about how to carry out this type of translation. So, I saw my VOC book as an interesting, useful item to the product development. So, I'm happy with it.

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Joe Dager: There's a section of product development process in the 'Voice of the Customer' book. One of the things I noticed right away was the concept design process that y ou talked about. Take a few concepts , select them in detail , and test them and then the iteration of going back through it. That seems a little bit of what I'm seeing in Lean software development these days, is people are talking about testing early and fa iling early before they go on. When you get into larger companies, you need tools like Six Sigma to be able to interpret that data that comes back from that. Isn't that correct?

Kai Yang: Oh yes. Absolutely , i n larger companies, the Voice of Customer -- fir st of all, they have a different kind of Voice of Customer. People do not have the same opinions, even for the same product. So, also, they have, for example , the product such as cars, they have many different aspects: appearance, drivability , all kinds of things. You really need a good system to process this kind of data. And also, you need coordination. So, one of the experiences which it doesn't do well is throw the information over the wall by marketing people to engineer and design. So even though they say the same thing, they don't have the same interpretation. So finally, the product doesn't reflect what a customer really wants. I think ; no matter for large or small companies, how to translate the voice of the customer into your design practice is real ly important for final success.

Joe Dager: How do marketers receive the Six Sigma process? Do they welcome the value of the interpretation that data that Six Sigma gives them? Or is there a resistance that there's just too many statistics, there's too ma ny tools to use?

Kai Yang: That will be a part of the headache if you're trying to implement that. I strongly think we should have, in doing this type of work; we should have a joined team, a

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multifunctional team of marketing people, design engineers, eng ineering managers, because the people need to talk to each other to really know what they are doing. If the engineer knows the marketing people, what they do, the interface with real customers, they will know things a lot better. Also the marketing people, they will know what headache, what's the problem facing the engineer, what's easy to do, what's not easy to do. They are also more able to provide useful information for engineers. The desirable approach would be a multifunctional team working together. T hat will overcome a lot of problems like that.

Joe Dager: You touched upon the Blue Ocean Strategy. Do you use that type of strategy in the design for Six Sigma process? Is that a strategy that is really doable?

Kai Yang: For a design for Six Sigma, we talk about a few aspects of design. First is how to design a product that really adds value to your company. I have to say ; Apple did a good job on it. They launched a sequence of products that people didn't see before. It really opened people's eyes. Oh, you can do something like that. That's really feasible. They created a marketing niche that has very low competition. So, this is the concept of Blue Oce an. It's not a crowded sea. You have too many fish boats to catch too little fish. This is a big ocean with nobody competing because you offer something unique. And this is a part of innovation, part of the things that as a design team, as a product develo per, it's your dream to come up with. In traditional Six Sigma, they don't bring these things into the picture, but I think Apple is an excellent example of success in this category.

Joe Dager: I think you're so right there. Looking through your books, I t hink I can say this; your books aren't for the light - hearted reader . There's a lot of depth to them . You've

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to want to take hold of the subject . I found myself reading certain sections of it, especially when I into customer survey design, and picking certa in parts out of it . T hings that I thought really need to be considered . I guess large companies have the staff to do and are able to do it. But small companies have to compete in the world of handling this data now. Do you think they can apply some of thes e things that you talk about in your book?

Kai Yang: I remember, for example, the survey design. I remember one example very well. One day I was invited into China to give some lectures and afterwards went to this restaurant. After eating all the food, th ey gave me a survey form. So basically the survey form had three questions. Do you like the food, yes or no? Do you like the service, yes or no? Do you like the price, yes or no? Something like that. Then very quickly, I fill in the survey form. But when I think at heart wh ether the management can really use this customer survey to improve their business? If I say, 'Well your food is not good. Your service is not good.' Then they know they have an unhappy customer. But there's no way they know why your ser vice is not good, why your food is not good. I t doesn't really serve their purpose. I n the book , we talk about the Ethnographic methods. I n this method, the real analogy, you don't need a lot of data. You can put some chef, these kinds as a customer, mingle with customers, then observe how they eat. What things they pick, what things they don't pick. Then you know what type of food they like, how you can improve. Also , you know what type of service. Is it the speed, is it the friendliness they like, what kin d of thing they don't like. So, by adopting the philosophy, not a complex methodology, you can make a big difference. Even for small businesses, they don't need rocket science to use these methods. That's an interesting example I always serve.

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