

UMUC Business and Executive Programs Podcasts

**Executive MBA Education in Global World**

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**Interviewee:** Dr. Stephen Knode, Program Director and Faculty, EMBA Program

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**Glenn:** Welcome to Executive MBA Education in the Global World, a weekly podcast that features highlights of the Executive MBA Program and discussion of how the program prepares executives for leadership in today's global business environment. I'm Dr. Nancy Gentry-Glenn, Director of Administration, Business & Executive Programs, your host for the day.

Our guest today is Dr. Steve Knode, Program Director and Faculty, Executive MBA Program.

The topic for today's show is Technology Assisted Decision-Making, which is the focus of Residency 4 of the Executive MBA Program. We will be discussing how this residency helps leaders practice using technology to make effective decisions.

Dr. Knode, what is the main goal of the Executive MBA residency featuring information technology and decision-making?

**Knode:** Well, Nancy, we're trying to do something pretty unique in this residency. We're trying to show students technologies that will assist in decision-making, which is a pretty ambitious goal. This is their opportunity to both learn about and try first-hand some of the technology tools that have been around for a while but aren't yet widespread, to facilitate decision-making -- things like decision support technologies, intelligent system technologies, group collaboration technologies. All are part of this residency.

What we do in the residency is try to deal with both the what of the technology so they're not mysteriously appearing in their repertoire, and also deal with the so-what. In other words, how are these things being applied today in making changes in business operations? These are technologies that are developed but yet not widely spread in terms of their usage. We do have a lot of success stories, but mostly by what we call the early adopters or the early majority, organizations that have decided to leverage these technologies to get an advantage over their competition, so it's a unique opportunity for our students to see how information technology can assist in these areas. We're hoping this exposure to these technologies will make them what we call enlightened consumers -- in other words, aware of the technologies, what they can and can't do to facilitate and assist in decision-making.

**Glenn:** Thank you. Can you tell us what specific aspects of decision-making can be aided by the use of information technology?

**Knode:** Sure. What I like to do when it comes to technologies to assist in decision-making is sort of put it in perspective using the terminology find, filter, and fuse. The first thing

decision-makers have to do today is find the information they need to make decisions, and we're in an environment with information overload where there's so much information out there via the web and other sources that there's no shortfall of information. What there is is a shortfall of information in the right context. So the first thing we try to do is show them ways in which they can find information better than just going into a search engine and looking at a general term.

Now, once they find the information, whether it's from a more specific way of searching or through collaboration, we want to put that information in the right context, we want to get it in the right format, we want to get from the right sources, we want to have it be specific to the problem. So this gets us more into what I call the filtering of information, and there are technologies out there now to help you deal with this. They eliminate the redundant information, they eliminate the outlier information, they eliminate information that's not relevant to the specific problem. Now, the technologies to find and filter are pretty well developed and are fairly easy to learn to use.

What's much more difficult is the fusing part, the third F of the three. Fusing means putting the information into a model, it means putting it into some sort of format to facilitate the decision-making. And when you put it into a model, there's always going to be factors or criteria that can't be included, so-called exogenous factors, and we try to point that out to the students. But what we're trying to show them is that putting it into a model is still a better way of dealing with decisions than just winging it or using some sort of intuitive approach. Further, if you put the information into a model, you can frame the decision so that everyone's on the same path and understands the same frame for the problem, which is one of the big shortfalls in decision-making. Also, you have an audit trail.

Put it into a model, some sort of a decision support system, an expert system, use an intelligent agent, a neural network, et cetera -- and these are all technologies we cover. You capture an audit trail, so if you want to go back and look at a decision and see, what did we do, why did it work, why did it not work, you've got this audit trail. And then the most important thing I think a model does, and something that's often overlooked, is the ability to facilitate sensitivity analysis. Now, sensitivity analysis means you're going to get the baseline answer first. That is one point towards the answer. But you've made some assumptions, you've made some judgments, you've put some things in that aren't quite objectively specified. And so with sensitivity analysis, using some of these tools, you can go back and you can change things. You can change some of the inputs, you can change some of the weights, you can change some of the factors, you can do what we call what-if and so-what, and you can see if certain factors make a difference in the answer. If, in fact, certain factors, when they change very small amounts, make a big difference in the answer, then you probably need additional information. Where do you get that information? Well, you get it from some of the tools we covered in the first part. So it can be a looping and an iterative thing where you go back and find additional information -- filter additional information, fuse it back into the model. And so we're dealing with certain models and techniques and technologies that are, in fact, designed to assist -- key word assist -- in decision-making.

**Glenn:** And how is technology assisted decision-making practiced in the residency?

**Knode:** Well, I think we take a very interesting and comprehensive approach. You know, there's work that the students do before their residency that's part of the course that leads up to this residency. But when we get to the residency itself, we first start by giving an overview of many of the decision biases that are well-known and captured in many documents and writings. We know, for example, that people have trouble framing problems. They tend to have different views, different lenses, of what the problem is. And that's probably the number one bias, is that everyone has their own frame of what the problem really is. I think we're seeing that now in some of the problems that the country faces.

There are other biases that we cover -- anchoring, which means people tend to put too much emphasis on specific pieces of information that resonate in their head because they heard it on TV, they saw it in a blog, who knows? And then there are small sample-size biases. And then some of the biggest ones deal with our own cognitive limits. We have well-known cognitive limits on the human brain, one of which is this idea that we can only recall or remember five to seven pieces of information. Well, if you can only recall or remember or deal with five to seven pieces of information, then it's difficult to deal with a complex problem where you might have dozens of important criteria or information items that need to be included. So we first start by giving this overview of the decision biases, and I think that's an important foundation.

Then we get into some of the theories of decision-making that are out there and popular today. There are theories like intuitive decision-making, which is making sort of a comeback with books like *Blink* that was published about two years ago, and emphasizing the fact that people do need to make decisions, often intuitively, on the spot, without much information. We also deal with collective decision-making as an additional theory, and this deals with things like *The Wisdom of Crowds*, another book that was written recently which is very popular, saying that, collectively, we can get far more wisdom from a group of people than from any individual. And the third theory we cover in some detail is what I call rational decision-making, where we're making use of a model.

The overview of the biases sets the framework, then we go through some of these theories in order to show people different ways to deal with decision-making. The key aspect, of course, is, when do I use which of the approaches, when are they appropriate, what are their weaknesses, what are their limits, et cetera. So after dealing with these first two aspects, we then move into some specific technologies and let them try them out -- things like group systems, decision support, intelligent systems, collaborative technologies. We start by giving an overview of those, then we let them have some specific hands-on applications to deal with. In other words, they actually try the technologies and make their own decision as to whether these things work or not. Finally, we give them some examples. So we say, here's where these are being used in the real world, and I try to point out success stories as well as areas where there's been failure, and point out the weaknesses and strengths of the tool so that they walk away knowing when each of the tools would be appropriate. Now, we kind of capture all of

that, and then at the end, we talk about, how would you go about making your organization adopt some of these technologies?

Here's a difficult part. We can show them the biases, we can explain the technologies, we can give them hands-on practice with the technologies, we can give them examples of how the technologies are being used. Yet when they go back to their organization, they're going to face a couple of significant hurdles even armed with that information. The biggest hurdle, I believe, when they go back to an organization, is going to be dealing with culture change. Organizations are run today by a generation of folks who did not grow up using computers. They all agree that computers are useful for word processing, for spreadsheets, for email, for surfing the web. They have a database for their company. I'm sure they're happy that their HR people are using some sort of software to manage benefits. I'm sure they're delighted that their accounting department is using some sort of software to manage the books. They really don't have any inkling that today's technology could be used to facilitate decision-making. That's always been something that humans do, not computers. And I want to emphasize that the technologies we're showing in this residency are really designed to assist decision-makers, not make the decisions. So the biggest challenge they're going to face when they go back to the organization armed with this information is changing the culture, fostering an innovative approach that lets people try these things, grow into these things, because the other challenge they face is that you do need some time. You have to experiment with them, you have to try them on a small scale, you have to show success stories. And so we try to give them some tools and ideas where they can go back and sort of make a difference in their organization. It's not going to be easy, but as these technologies spread, we are beginning to see more and more organizations adopt this approach.

**Glenn:** Dr. Knode, does the use of information technology guarantee a better decision? If so, how? And if not, why not? What are its limitations?

**Knode:** Well, I try to be very, very forthright and careful in saying that there is no guarantee. These technologies do not remove some of the problems with decision-making. Unlike technologies like spreadsheets, which can calculate the net return on a bond to 16 decimal place accuracy, the kinds of technologies we're showing are not in that same genre. What they're designed to do is facilitate, as I said earlier, framing the problem, facilitate putting the inputs in so that everyone can see what's in the problem, what's not in the problem, use a good model to help you do tradeoffs, capture an audit trail, collect the correct information.

There is no way to guarantee that these models and approaches that we talk about would do this for you. However, again, the advantages are pretty significant in just doing what I have outlined. In other words, these technologies that do help you frame the problem properly, do help you put the problem into the proper model, do help you use the appropriate criteria, do help you do the appropriate amount of sensitivity analysis, do allow you to capture an audit trail so that you can look back and see why this approach did or didn't work, are significant, yet we still insist that the students understand that the human factor does come into play because there are exogenous or

outside factors that are not going to be capable of being included in any model. So it is important that the students go back and understand when they need to apply some of these exogenous factors, other things. Political considerations would be one. Sometimes you come up with an answer that looks great, but politically it's unsaleable, so you do tradeoffs. You say, okay, we have to go with what's politically acceptable. Yet I would maintain that the model has given you a baseline so you know that when you move to something less than optimal or less than what the model says and do something that's politically acceptable, you know how much you're giving up.

I never argue with people who say, I don't care what the model says, I want to go left instead of right. I just say, yes, but let me make sure you understand what going left is going to cost you. You do have the freedom to make these decisions, but you need to know that there's a cost. There's a cost involved of not doing what the world or what the model is suggesting is appropriate, and instead, going your own way. So we're trying to make sure they understand that the model is not a panacea, the technologies we talk about are not guaranteed approaches to make decisions better, but they do remove many of the cognitive and other biases that are in decision-making, and the results usually are better than if you just went with some off-the-wall or off-the-cuff approach.

**Glenn:** And finally, what will executive participants take away from this residency session that they can use in their organizations?

**Knodd:** A good question. Let me go back to what I said when we had the first question, about what do I expect them to get? I expect them to see the technologies in detail enough so that the what factor is clear. What's going on behind the scenes? There's no magic in these technologies and these approaches. Nothing magic is happening. There's no real artificial intelligence, even though we call some of them AI programs. But when they know what's going on in, like, a neural net, an expert system, a collaborative technology, a decision support system, that helps them understand what's going on behind the scenes. So we give them a little dose of the what.

Then equally important is the so-what factor. In other words, they now know that the real world has serious applications of these technologies, where they do work, and they now know how they might be able to use them in their organization. So it's important that they get both the what and the so-what. We want them to go back to their organization and become the innovators and the early adopters for these technologies when they see the appropriate place to do so. According to the adoption curve that's widely used by Gartner and everyone else, only about 2.5 percent of the population are true innovators. There's another 13.5 percent that fall into the category of what we call the early adopters. These are people who adopt technologies before they're really ready for prime time, and often that leads to trouble. Often that's expensive, sometimes the technologies don't work, but they're willing to try early on. Then there's a group that we hope our students fall into, the 34 percent of this bell curve that are called the early majority. These are the folks who, once they see that a technique, a technology, an approach is working and there are enough success stories -- killer apps, if you will -- out there, jump on early so that they can leverage these technologies and move their organization forward. Now, that covers about half of the bell curve.

Let me finish it up by saying there's another 34 percent that are what we call the late majority, who get on late and are sort of catching up. And then there's a final 16 percent who are what we call laggards, who never adopt the technology, and we're hoping they won't be there. So our goal is to give them enough ammunition to be in that early majority category, to understand the pros and cons of these technologies, to be well armed and aware of where the success stories are, to know the limits of the technologies, and to be the change agents in their organization.

**Glenn:** This is Dr. Nancy Gentry Glenn, and I'd like to thank Dr. Steve Knode for helping us understand information technology assisted decision-making. Thank you, listeners, for joining Executive MBA Education in the Global World.

**Knode:** Thank you, Nancy.

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