TIM Lecture Series

Technology Adoption by Design: Insights for Entrepreneurs

Stoyan Tanev

> *"We need to think of technology adoption in design terms. The key is to balance product design with design for adoption. Ultimately, it is the adoption that makes innovation happen."*

Stoyan Tanev
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Overview

The sixth TIM lecture of 2013 was presented by Stoyan Tanev, Associate Professor in the Department of Technology and Innovation at the University of Southern Denmark, who examined the topics of innovation, adoption and customer creativity within the context of technology entrepreneurship. The event was held at Carleton University on November 7th, 2013.

The TIM Lecture Series is hosted by the Technology Innovation Management program (carleton.ca/tim) at Carleton University. The lectures provide a forum to promote the transfer of knowledge from university research to technology company executives and entrepreneurs as well as research and development personnel. Readers are encouraged to share related insights or provide feedback on the presentation or the TIM Lecture Series, including recommendations of future speakers.

Summary

In the first part of the lecture, Tanev discussed the problems associated with the most popular process view of innovation. Despite widespread, intensive efforts toward innovation, very few innovation initiatives are successful. At the heart of the problem is the failure to distinguish between *invention* and *innovation* (Denning and Dunham, 2012; innovators-way.com), which leads to two myths about innovation:

1. **The invention myth:** inventions cause innovations. In fact, the outcome of invention practices is an idea or prototype for consideration; the outcome of innovation practices is adoption of a new practice in a community.

2. **The process myth:** innovation is a process that can be managed; there is a "right way" to do things, standard operating procedures efficiently coordinate the activities of all, etc.

Thus, the key difference between invention and innovation is that invention is related to the creation of ideas, whereas innovation is related to adoption in the marketplace. The first myth tempts people to focus on creating ideas rather than fostering adoptions. The second myth tempts people to take "many shots on goal" rather than cultivate the skill of accurate shooting.

Tanev follows Denning and Dunham in describing these two myths as a "toxic combination" that can be overcome with an alternative definition of innovation: "the adoption of a new practice in a community" (Denning, 2012; tinyurl.com/kh9fhnf). In this definition, the innovator is an individual who does not only sense and move into new opportunities but also mobilizes all the necessary resources to enable potential customers to adopt the new practice. The definition merges together innovation and technology entrepreneurship as an investment into a project focusing on the adoption of products and assets based on scientific, engineering, and technological inventions.

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One of the key points of the lecture was that the predominant focus on technology development and product design has to be balanced by considering their adoption in design terms. In other words, innovation could be significantly enhanced by focusing on design for adoption. It is the adoption of new products and services that makes innovation happen as well as what makes entrepreneurs successful. Adoption is a job that needs to be enabled and facilitated by the entrepreneur and should be thought in global terms. It requires specific personal skills and practices that could be taught and learned.

Grounded by this definition, key insights for entrepreneurs were provided by combining several frameworks, all of which are relevant for the adoption of new technological products and services. A key insight came in the form of a generative adoption framework suggested by Denning and Dunham (2012; innovators-way.com). The framework includes three specific practices (offering, first adoption, and sustaining) with a focus on their anatomy, typical breakdowns, and "what to practice" points.

In the second half of the lecture, Tanev focused on the problems of value transfer and customer creativity as an additional major adoption factor. In particular, the challenge with value transfer from innovators to customers relates to the innovator's focus on the total value of a new product, which is typically higher than the customer's perceived value of the product. Customers perceive value on the basis of the relative benefit of the new product compared to the existing way of doing things. The challenge with the relative benefit for customers is that: i) the potential customers do not have the full picture of the total value built in the product and ii) in the majority of the cases, the perceived value of the product is the result of their own efforts. In this sense, the value perception that will make a specific potential customer buy is to a great extent a result of this customer's own activities and efforts. On this basis, Tanev suggested that activity-based approaches such as actor-network theory and activity theory could be appropriate in studying the dynamics of product adoption.

Actor-network theory (ANT; tinyurl.com/77szlr6) could be described as a set of tools, sensibilities, and methods of analysis that treat everything in the world as a continuous effect of the webs of relations within which it is located. One of its key tenets is that nothing has reality or form outside the enactment of its relations to other things. In ANT, there is symmetry between human and non-human agents; non-human technological artifacts are considered as autonomous and active. In this way, when studying technology innovation and adoption, the type of actors at work should be increased and the objects should be made "participants in the course of action". ANT has inspired an innovation-translation approach to technology adoption, which states that innovations are never adopted in their original form and that the customer plays a key role in giving the final shape and the specific meaning of the innovation. An innovation moves in time and space by actors who modify it, deflect it, betray it, add to it, appropriate it, or let it drop. Straightforward adoption is an exception requiring explanation. In the innovation-translation approach, a technological product distributes the forces that will support or resist its adoption, and the design for adoption should set out all of the actors who seize the object or turn away from it. It should also highlight the points of articulation between the object and the interests it gives rise to.

Activity theory (AT; tinyurl.com/cz48m) provides a framework for thinking about activity as it is expressed in the use of technology. It emphasizes the importance of human intentionality and assumes an asymmetry (in contrast to ANT) in the interaction between people and things. Some of the key points of AT include: i) the analysis of activities enables the understanding of both human subjects and technological products; ii) no properties or attributes of the subject and the object exist before and beyond activities; iii) product attributes do not just manifest themselves in various circumstances, they truly exist only in activities and only when being enacted. AT considers creativity, reflexivity, and resistance as a source of change as well as critical adoption factors. Creativity refers to an imaginative activity directed towards an object in which an original product emerges. Reflexivity refers to a reflection that leads to a change in practice. Resistance refers to an opposition to a technology or to a practice associated with a technology. In this way, the adoption framework of AT could be therefore related to the customer creativity perspective suggested in the first half of the lecture.

Finally, Tanev suggested an activity checklist approach (Kaptelinin and Nardi, 2006; tinyurl.com/m4qp8s3) that could be used in combination with ANT and the generative framework for the design of technology adoption environments. The combination of the three frameworks allowed the emphasis of several final major points:

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1. Enabling adoption is the essence of innovation and entrepreneurial practices.

2. Adoption is a double-edge job of the innovator/entrepreneur and of the customer.

3. The value of the product is in the eyes of potential customers.

4. Product adoption depends critically on the efforts and creativity of customers.

5. Customer creativity has to be enabled and supported for adoption to happen.

6. The personal skills approach to innovation is a great resource in the adoption of adoption skills.

7. Activity-based approaches are a great source of insights for innovators and entrepreneurs.

Lessons Learned

In the discussions that followed each portion of the presentation, audience members shared the lessons they learned from the presentation and injected their own knowledge and experience into the conversation.

The audience identified the following key takeaways from the presentation:

1. The idea of dropping old practices and adopting new practices is easy; making it work in reality is very challenging.

2. Humility is very important, especially when refining a product towards better adoption.

3. It is important to harness the creativity of customers. Customers are as important as the designers, but it is amazing to see how rarely customers are considered as an active part of the adoption process.

4. Innovation success requires customer value, trust, and final appreciation of the new products or services. It is the focus on practices that makes the learning possible.

5. Successful people have a natural ability for conversations; however, it is a skill that anyone can develop over time – with practice.

6. The pursuit of strategy needs to align the adoption with a difference. Successful businesses are the ones that do things differently and not just better than others.

7. It is more important to have an anchor client – not a new customer – and make the anchor client become the first adopter.

8. Use a first prototype, get feedback and use the feedback to get to the second prototype. Creativity comes from seeking and enabling feedback; feedback leads to more adoption.

9. Differentiation is very important with technology products, but differentiated value is the key.

This report was written by Stoyan Tanev and Chris McPhee; the lessons learned were captured by Derek Smith.

About the Speaker

Stoyan Tanev is an Associate Professor in the Department of Technology and Innovation and member of the Center for Integrative Innovation Management at the University of Southern Denmark in Odense, Denmark, as well as Adjunct Professor in the Department of Systems and Computer Engineering at Carleton University in Ottawa, Canada, where he was previously a faculty member in the Technology Innovation Management Program. He has a MSc and a PhD in Physics (jointly by the University Pierre and Marie Curie, Paris, France and the University of Sofia, Bulgaria, 1996), a PhD in Theology (University of Sofia, Bulgaria, 2012), an MEng in Technology Innovation Management (Carleton University, Canada, 2005) and a MA (University of Sherbrooke, Canada, 2009). He has multidisciplinary research interests with a focus on the fields of technology innovation management and value co-creation. Dr. Tanev is member of the Review Board of the *Technology Innovation Management Review*.

Citation: Tanev, S. 2013. TIM Lecture Series – Technology Adoption by Design: Insights for Entrepreneurs. *Technology Innovation Management Review*. December 2013: 39–41.

Keywords: technology adoption, customer creativity, co-creation, innovation, invention, actor-network theory, activity theory