

Two to Tango is not enough: How to build ecosystems for smart service innovation?

Case study on Executive level

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Abstract

Senior managers of two German mid-sized world market leaders in sensor electronics (ifm electronic) and mechanical engineering (GEA Group) discuss the opportunities and barriers of developing smart service innovations. The case study addresses different roles and patterns in ecosystems of multiple collaborating actors in different stages of development. The open-end discussion invites learners to evaluate the opportunities from different perspectives based on industry-specific experiences.

Keywords

Digitisation, industry 4.0, cyber physical systems, hidden champion, business model, value proposition, smart services, servitisation

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Integrated Case Method

The case researcher has conducted primary research by collecting qualitative (interviewing the managing director and marketing manager) and quantitative data from ifm electronic and GEA Farm Technology and developed a learner-centric, problem-based case study for management training (cp. figure I).



Figure I: Integrated Case Method IFM

Disclaimer

Prof. Dr. Jan-Philipp Büchler is the author of this case study, which is intended solely for teaching purposes in management education at institutions of higher education. The case is designed to be used as the basis for course discussion rather than to illustrate either effective or ineffective handling of a management situation.

The contents of the case study are carefully researched based on interviews with company representatives as well as publicly available primary and secondary sources. Nevertheless, mistakes cannot be fully eliminated. The publisher, editor and authors can assume neither legal responsibility nor any liability for incorrect information and its consequences.

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The case study at hand has been developed in cooperation with the companies ifm electronic and GEA Farm Technologies. All illustrations and trademark rights are – unless explicitly indicated otherwise – corporate property.

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Milk & More Day – Pitch Session

“How can we ensure safe, reliable and nutritious food for a growing world population with a climate neutral footprint? Among the many sustainability challenges facing humankind today, this is certainly one of the bigger ones.” Dr. Armin Tietjen, CVP of GEA states in his welcome address to the Milk & More Day at headquarters of GEA Farm Technologies in Bönen, which is located in the rural hinterland of things in Westphalia. The Milk & More Day is the annual innovation event of GEA. The company invites researchers from universities, think tanks and institutes, students, entrepreneurs, customers, suppliers and diverse other stakeholders for a fresh cross-industry perspective on future innovation opportunities. To this end, GEA and some partners prepared short pitch-style presentations with straight-forward messages to trigger discussions and ideas among all participants.

The first presentation is given by Henrik Böttner who is responsible for product development for milking and feeding systems at GEA. When he looks at the dairy landscape, he sees a highly dynamic industry open and ready for innovation. “This is an exciting time”, explains Böttner. “The power of data, digitisation and automation is unlocking so much additional potential in dairy farms.” He points to a trend towards more condensed operations: farmers having to increase milk yield with the same amount of space, same number of cows and employees. “Sustainability in dairy farming depends on achieving new levels of efficiency”, he says. “Data is critical to this so that farmers can anticipate more – analyse and establish links to feed types and yield, for example, or intervene early to prevent cows from getting sick.” For Böttner, GEA’s role is to support farmers move towards more “predictive” farming and ends his presentation with a snapshot of data dashboard for dairy farmers (cp. figure 1).



Figure 1: Dashboard of smart data for dairy farmers

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Böttner's colleague Michael Strotmann, Product Manager for Conventional Milking Systems at GEA, jumps on the stage and takes over from his colleague for addressing a future full of possibilities for dairy. "Herd sizes are increasing in many cases to achieve economies of scale, but I think we will also see small farms specialising in niche areas – producing not only milk, but also a number of other ecosystem relevant services, such as carbon capturing, manure processing to close nutrient cycles, or grazing services to keep the landscape open." Along these lines, Strotmann talks about dairy farms evolving their business models – away from traditional linear growth and towards more cyclical models where farms provide services beyond milk and meat production. "The cyclic models inherit the ability to regenerate with each cycle, to recover from stress and learn," explains Strotmann. "This leads to a more conscious striving towards greater knowledge and efficiency – and the power of data and digitisation will help us define the successful patterns. However, we all need to learn and to develop an ecosystem approach to innovation and value creation." Michael Strotman points on his chart (cp figure 2).



Figure 2: Michael Strotmann (center) the GEA innovation ecosystem

Dr. Tietjen welcomes an outstanding external market researcher on the stage. Claudia Müller knows the farming industry by heart. With over 22 years of experience in the industry, she's been there to see smart dairy farming take root. "I remember the first feeding computers, one of the first 'smart' farming solutions back in the 90s", she recalls. Today, according to a recent

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German Bitkom study almost one in two farms in Germany for example are using intelligent feeding systems and almost as many are using agricultural apps for smartphones or tablets. 21% of dairy farms in Germany already use milking robots, with demand growing around the world. And according to the latest study from Dutch ABN AMRO bank, the worldwide market for agricultural robots can double in size in 5 years' time. "Optimal herd management on the farm has now become one of the most important success factors for modern and sustainable livestock farming", says Claudia Müller. And more and more often today, optimal herd management means relying on smart technologies: sensors, robots, digital tools and software.

Dr. Armin Tietjen announces the next presentation delivered by a research partner and supplier of GEA. "I am happy to welcome Nadine Rahman of ifm electronic to elaborate on the status quo in sensor electronics and big data analysis in our industry."

"The big data generated by today's dairy farms is a real treasure in many different ways. It does not only improve transparency for real-time machine monitoring and predictive maintenance, which is of course a valuable service for guaranteeing flawless and stable processes. It is much more than machine data. It is cow data. This data is the fundament to improve animal health." Nadine Rahman explains the possibility and benefits to track each cow's activity data, such as lying and eating times for example. With its heat detection feature, the CowScout sensors also provide data on optimum time for insemination. The sensors continuously measure the cow's behaviour – 24/7 every day in the year – and generate an alert if the cow's behaviour deviates from her usual activity patterns, comparing her behaviour to the previous weeks rolling average. A new optional positioning function allows for faster locating of cows and thus immediate action. "This improves the health status of cows. Healthier cows give more and better milk. This is real value creation."

Another example is the dairy milk cell count sensor, which uses patented sensor-based technology to measure somatic cell count classes in milk for earlier detection of mastitis. By analysing milk at each udder quarter individually, the sensor gives farmers a new level of early detection capability to protect the health of their herds. "Real-time data and analysis allow managers and veterinarians to intervene earlier with targeted action so cows can recover quicker from illness and require less antibiotics," Natalie Rahman explains. "The transparent flow of real-time data and the well-arranged dash boards allow for cooperation of many actors on the farm and around the farm: suppliers, farmer, customers, veterinarians, machine equipment manufacturers ... We create ecosystems for collaborative value creation. However, we need to decide about the roles, rights and permissions in these ecosystems with regards to data access, usage, monetisation, ownership and control. This will change with the emergence of subscription models for milking robots and machines."

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The final pitch presentation in the morning session is delivered by a researcher from the University of Bonn's Institute of Animal Sciences. Dr. Ute Müller emphasises the increasingly IT-based nature of work on the farm may be benefitting the industry in other ways as well. "Smart technologies make agriculture attractive again to younger people. It has been difficult to recruit talents in rural regions because of associations with herd management as strenuous and generally outdated method of work. But this is fortunately changing", she says. "In my daily work with my students, I see them getting excited about combining their practical and scientific knowledge with the power of IT to manage the complexity of modern-day dairy operations. This is an important element that we shouldn't underestimate in terms of the long-term sustainability of agriculture and its required industry itself."

"Thank you for these insightful pitches and perspectives on the development of our industry. This is a lot of food for thought. Let's enjoy some snacks, a glass of milk or coffee and good discussions", Dr. Tietjen closes the first session.

Milk & More Day – Networking and Negotiation

"Our industry is transforming at a stunning pace", a farmer starts the conversation with GEA staff and ifm speaker Nadine Rahman. "I think you made a very interesting point when explaining the value creation not only in terms of machine efficiency, but with a focus on the health of the cow", the farmer states towards Nadine Rahman.

"Well, thank you. I mean, this is our mission statement: ifm – close to you. We always try to walk in the customers shoes of even hoofs in this example", Nadine Rahman answers.

"Many companies claim to think customer-centric, but they are data-centric or technology-driven", Dr. Tietjen adds. "I experienced ifm electronic always as hard-line customer-focused. This fits perfectly well to GEA and I think this is part of our success."

"Where do you see the dairy industry in ten years from now?", the farmer asked the two managers.

"Wherever you move to", Nadine Rahman responds promptly. "I mean, we will develop more intelligent and faster sensors, more intelligent and smarter data analytics ... but we need to create value for you, for your cows and for society."

"This is a fair point and the latter aspect will become ever more important. Our societies demand more sustainable and climate neutral production systems and in fact, it's our planet demanding it", Dr. Tietjen explains.

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“Well, yes ... and ... could you already tell me, how much CO₂ I will save, if I buy your machine and not the one of your competitors?”, the farmer asks.

“This will become the most interesting question in the future. Businesses will create competitive advantage, if they are credibly and really carbon neutral or they might lose grounds. We push to develop towards climate-neutral farming together with you ... and finally we might see a change from buying milking robots to subscription models”, Dr. Tietjen answers.

“That’s good to hear. Nevertheless, in how far does this change the way of value creation and cooperation between the multiple actors in our innovation ecosystem? It will take more than two to tango in the futures”, Nadine Rahman resumes. “The monitoring system and reporting will become much more complex. Nice, we can do that. However, it involves many more actors in the growing ecosystem with potentially conflicting interests ... It will result in new ownership structures of machines and generated data. Have you already assessed these issues? Are you already prepared?”

Teaching Note

Target group: Middle and Senior management of diverse companies and functions on their career path and training to develop towards executive management positions.

Teaching objective: The case study invites learners to:

- reflect and discuss the requirement for developing new system of value (co-)creation in order to develop smart service innovations
- share experiences and find analogies in various application contexts in order to identify the benefits and limits of transfer of existing business models vs. smart service business models.
- decide on suitable roles and desirable positions in smart service innovation ecosystems

Learning Outcome: Learner should be able to:

- describe appropriate management frameworks to analyse organizational requirements
- develop a systematic approach for assessing and deciding on the important building blocks and business mechanisms in smart service business models

Case Type

This case is a complex case on smart service innovations in the context of value co-creation.

Case Format

The case is a written case that can be supported by infographic, video interviews and photographs.

Evaluation criteria:

Evaluation shall take place based on the following criteria

Evaluation criteria	Weight
research and analysis	high (20%)
problem solving	high (60%)
communication	moderate (20%)

Grading:

The case teacher moderates the case and triggers discussions, transfer of insights and experience. There are no right or wrong answers and no classical grading.

Preparation

We recommend that learners are already familiar with the two master class case studies:

- Büchler 2021: What makes a great strategy? GEA Farm Technologies Road to Smart Farming Ref. No. ECASA_2021_1]

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- Büchler / Ciszewski 2021: Entering the Next Level of Value Generation at ifm electronics: Organizing for smart service transformation [Ref. No. ECASA_2021_2]

Both case studies are available as OER content on www.ecasa.org

Instruments

The case study is designed to teach and apply the following strategic management tools:

- service-driven business models
- smart service prism
- servitization-digitization-portfolio

Additional Readings & Impulse

Anke, J. / Poepelbuss, J. / Alt, R. (2020) It Takes More than Two to Tango: Identifying Roles and Patterns in Multi-Actor Smart Service Innovation; *Schmalenbach Business Review* Vol 72, pp. 599-634. <https://link.springer.com/content/pdf/10.1007/s41464-020-00101-2.pdf>

Etiemble, F. / Osterwalder, A. / Pigneur, Y. / Smith, A. (2020) *The Invincible Company - How to Constantly Reinvent Your Organization with Inspiration From the World's Best Business Models*, Wiley, Hoboken: NJ.

Frank, A.G. / Mendes, G.H.S. / Ayala, N.F. / Ghezzi, A. (2019) Servitization and Industry 4.0 convergence in the digital transformation of product firms: A business model innovation perspective. In: *Technological Forecasting and Social Change*, Vol 141, pp. 341-351.

Gebauer, H. / Paiola, M. / Rapaccini, M. / Saccani, N. (2020) Digital Servitization: Crossing the Perspectives of Digitization and Servitization. In: *Industrial Marketing Management*, Vol. 88, pp. 378-388.

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