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CASE STUDY: USING EXECUTIVE EDUCATION PROGRAMMES TO HELP ORGANISATIONS ENGAGE WITH IOT PLATFORMS

Developments in technology such as the Internet of Things (IoT) are driving opportunities to create economic value and influencing the way businesses engage with the world. Researchers from the University of Cambridge have explored how executive education materials can improve firms' understanding of how IoT can be used to generate value and support new business models.

THE CHALLENGE

Digital technologies, including the Internet of Things, are enabling the transformation of organisations across industry sectors at increasing scale. IoT technology is becoming easier to implement, opening the door for a wider variety of companies to benefit from IoT applications – both in terms of economic efficiencies and through the adoption of new business models.

However, there are challenges in implementing Industry 4.0 in organisations. The incorporation of IoT to create new business solutions requires collaboration from all parts of an organisation – from strategic planning and finance to engineering and operations.

Executive development programmes (EDPs) are often used for building competencies for organisations wanting to transition to Industry 4.0. A team of researchers from the **Institute for Manufacturing**, University of Cambridge, has created and tested executive education materials to improve firms' understanding of how IoT can be used to generate value and support new business models.

The project, funded by **Pitch-In**, explores organisations' learning needs at different stages along their digital transformation journeys. By piloting education programmes, the team have identified how combining strategy and technology via executive education can successfully encourage the adoption of new digital technologies in industry.

THE PROJECT

Drawing on existing research and with input from industry experts, the team developed a curriculum to introduce IoT concepts and relevant strategies. Learning materials which provided an introduction to both IoT strategy and technology for senior managers were designed to raise awareness of possible strategies as well as the strengths and limitations of the relevant supporting technologies.

Participants were not required to have any education or knowledge in engineering or computer science, nor a technical background. The course aimed to teach just enough at a high level to reveal the potential of the technology. By using hands-on activities and real-world examples, course participants were shown how sensors work and how the use of the data generated could transform not only their organisations' operations but also the ecosystems in which their organisations participate.

“We used case studies to explore a range of IoT solutions, how to integrate them and how to generate value from them. This helps non-tech senior managers get a general overview of IoT technology so they can weigh up the strategies for adopting it.”

Dr Imogen Cleaver, Institute for Manufacturing, University of Cambridge

The team tested the course materials in three pilot courses delivered online and in-person, collecting data from participants so they could refine and improve the materials. Subsequent interviews with course participants revealed how successful the courses were at building knowledge, particularly around developing digital business models, products and services.

While the duration of the project was too short to allow for an assessment of the long-term impact on decision-making and work processes, interviewees believed their new knowledge would be useful.

“[The course] built my overall knowledge and understanding and also thoughts about what areas might be worth investigating further or progressing further.” Course participant

Some had plans to share their learning with networks in their organisations and even those from less strategic and more technical roles found value in attending the course. Others reflected on the usefulness of the hands-on tasks.

“For me, it showed how straightforward it is to create some electronics that get you IoT capabilities - and that in itself should not be a barrier for you.” Course participant

THE IMPACT

In collaboration with the **Fraunhofer Institute** in Germany, who have conducted similar research, recommendations for research institutions on how to design EDPs which combine strategy and technology for Industry 4.0 have been developed. These present a model of the learning needs of different categories of employees at different stages for organisations to optimise their IoT investment.

The team plan to use the research findings to design a new consortium offering to support organisations adjusting to Industry 4.0 in the healthcare, smart city and manufacturing sectors.

The course developed during the project will be delivered multiple times each year via **IfM Engage**, creating future individual level impact and in turn building IoT strategy competencies in organisations.

SEE ALSO

Ahner, L., Bayrak, Y., Cleaver, I., Ge, M.L., Neuhüttler, J. and Urmetzer, F. (2021) ‘**Impacts of Professional Education Measures on the Digital Transformation in Organisations**’ Advances in the Human Side of Service Engineering. Proceedings of the AHFE 2021 Virtual Conference on The Human Side of Service Engineering, July 25-29, 2021, USA.

Ahner, L., Bayrak, Y., Cleaver, I., Ge, M.L., Neuhüttler, J. and Urmetzer, F. (2021) ‘**How Higher Education Institutions and Technology Innovation Centres can support Organisations through IoT Digital Transformations**’ Advances in the Human Side of Service Engineering. Proceedings of the AHFE 2021 Virtual Conference on The Human Side of Service Engineering, July 25-29, 2021, USA.

PROJECT AND TEAM

RE01: Learning with IoT platforms while strategizing business ecosystems.

Dr. Florian Urmetzer, Dr. Imogen Cleaver, Dr. Aidan Parkinson and Maximilian Ge, Institute for Manufacturing, University of Cambridge.

PITCH-IN

Pitch-In aims to collaboratively identify and address barriers to the successful development, introduction and further exploitation of Internet of Things technologies across four key sectors, Cities, Energy, Health and Wellbeing and Manufacturing.

The project, run by a consortium of four universities (Sheffield, Cambridge, Oxford, Newcastle) is funded until 2021 through Research England’s **Connecting Capability Fund**.

