

Closing the Research Cycle

Verifying the Underlying Assumptions of the Cima Model on Stimulating Learning in Product Innovation Processes

José F.B. Gieskes



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VERIFYING THE UNDERLYING ASSUMPTIONS OF THE CIMA MODEL
ON STIMULATING LEARNING IN PRODUCT INNOVATION PROCESSES

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The Continuous Innovation Network

The Continuous Innovation Network (CINet) is a global network that brings together researchers and industrialists working in the field of Continuous Innovation. CINet is a continuation of the European Continuous Improvement Network, started in 1993. In 2000, the mission of EuroCINet was reformulated and its name changed to CINet, a research network on Continuous Innovation. These changes facilitate the dissemination, not just within but beyond Europe, of a new way of thinking about the integrated management and organisation of day-to-day operations, improvement and learning, and innovation and change.

The CINet PhD Network

CINet has developed a PhD network, which promotes research collaboration among PhD students and their institutions on topics of interest to CINet. In detail, the network objectives are as follows:

- To promote the development of research on continuous innovation and its applications to enhance companies' effectiveness and better use of human resources for more sustainable organisation of work.
- To facilitate research integration and mobility on a global level.
- To enhance research quality and, in particular, to promote synergy and collaboration on empirical research.
- To promote a better quality of PhD training and supervision.
- To promoting joint research programmes involving companies and academia offering the prospect of rigorous training and exposure of PhD students.

The CINet is unique for its focus on innovation management as well as for the specific vision that is shared by partner institutions concerning the role and potential contribution to innovation and improvement of human resources at all levels.

Characteristic for the CINet PhD network, relative to other PhD networks, is its strong emphasis on implementation and collaboration with industrial users. Students work in close collaboration with companies to analyse and solve management problems. Research designs involving in-depth empirical studies and action or clinical research are therefore encouraged. The PhD students involved in the CINet receive an intensive training to cope with concrete management issues. All the students who were so far rewarded a CINet-based PhD degree easily found their way to highly valued positions in industrial companies, in research institutes or as consultants.

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José F.B. Gieskes

University of Twente
School of Business, Public Administration and Technology
PO Box 217
Enschede
The Netherlands
j.f.b.gieskes@sms.utwente.nl

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1. Problem definition and purpose of the study

1.1 Introduction

“Industries world-wide are being confronted with a number of intertwined changes in their environments. Markets are making more stringent demands, competition is increasing and, in effect, companies are required to meet demands for efficiency, quality and flexibility simultaneously” (Boer, 1990).

In this environment the subject of “learning and improvement” emerges almost naturally and, indeed, lately we have seen an increased interest in knowledge, learning and (continuous) improvement in new product innovation processes, and more broadly, product innovation processes.

This contribution reports on research, which was aimed at helping companies, support and facilitate learning and improvement in their product innovation processes. The research especially focused on (a) managerial activities and decisions that help stimulating learning and improvement and (b) disablers that prevent learning and improvement to take place. The research arrived at propositions on effective managerial activities and decisions aimed at enhancing, or reducing the effects of disablers hindering learning and improvement in product innovation processes. The research built on data collected with the so-called CIMA methodology, a methodology that was the result of an ESPRIT project (CIMA¹) and that was to develop scientifically robust and empirically useful and usable knowledge on supporting mechanisms for learning and improvement in product innovation processes.

1.2 The basis of the study

¹ Continuous Improvement in global product innovation **MA**nagement

In 1997 the EC decided to fund a research initiative called CIMA² (Continuous Improvement in Global Product Innovation Management) – ESPRIT project 26056. The project started September 1st 1997 and finished September 1st 1999. Its initial overall objective was to develop, test and disseminate a methodology to support knowledge transfer in product innovation processes. The resulting methodology should suggest to companies which enabling mechanisms (levers) they could use to support continuous improvement and learning in product innovation.

The author participated as a researcher in the project (representative of the University of Twente).

By the end of the CIMA project in September 1999, the CIMA methodology had been developed, tested and applied in 70 companies in Australia and Europe. The results of the applications were stored in a computerised database that comprised company specific information on:

1. Contingencies related to:
 - the organisation itself (such as size and ownership).
 - the innovation processes that were subject of research (such as process complexity).
 - the products resulting from the processes (such as product complexity, markets).
2. Learning behaviours shown by individuals working in these innovation processes.
3. Enablers exercised by management to stimulate learning behaviours.
4. Disablers preventing learning and CI to take place, and
5. Information on improvement performance of the innovation process, as well as performance of the innovation process itself.

The data on all these elements (except for the capabilities³) were analysed with the aim to find (a) which levers in the CIMA model indeed are effective in stimulating learning behaviour, (b) what the influence is of disablers on learning behaviour and (c) whether performance is improved due to improved learning behaviours.

The research questions are as follows:

Research questions:

Which managerial activities and/or decisions (levers) have a stimulating effect on learning behaviour exhibited by individuals and groups in product innovation processes?

Which disablers or barriers for learning in product innovation processes can be identified and which effects do they have on learning in product innovation processes?

² CIMA Consortium partners were: Politecnico di Milano (I), MIP (I), ETASS (I), Trinity University Dublin (IRL), CORE Chalmers University Gothenburg (S), CENTRIM University of Brighton (UK), University of Twente Enschede (NL), INCITE University Western Sydney Macarthur (AUS), Monash University Melbourne (AUS), Edith Cowan University Perth (AUS).

³ The capabilities were not operationalised in the CIMA research project and are subject to further research at this moment. They are therefore excluded from further analysis.

Does an improvement in learning behaviour result in an increased improvement performance in product innovation processes?

Statistical analysis of data from the CIMA database was carried out to provide the answer to the first research question. The second research question was answered through analysis of information on open-ended questions from the CIMA questionnaire. Subsequently, the CIMA database was used as the source for trying to find an answer to the third research question.

The results in turn formed the basis for conclusions and recommendations. Based on insight into the relationships between levers, disablers and performance improvement, propositions on the relationship between levers, learning processes and product innovation processes were formulated, that can be tested in further research and are expected to increase knowledge on stimulating learning behaviour in product innovation processes. Furthermore, although the present research considered only a subset of the data of the CIMA model, improvements to the CIMA model and methodology were suggested.

Figure 1 is a graphical representation of the research model (see last page).