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Managing Risk and Uncertainty: What's Different in Managing Radical Innovations?

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ABSTRACT

Risk and uncertainty are fundamental issues in management, particularly in innovation and technology management. Our contribution addresses these issues by asking: What's Different in Managing Radical Innovations? Why do we need a specific discipline for innovation and technology management apart from general management – if there were no differences in managing decisions with a low or high degree of innovativeness we would not need it

We often find pleas for a contingency view, stating that radical innovations should be managed in a different way from normal or incremental innovations. However, most of theses pleas are based on simple dichotomies of radical vs. incremental innovations, they are often only vaguely operationalized classifications of innovativeness, and there is still lacking consensus what should be the central dimensions of "innovativeness". A smaller amount of studies offers empirical evidence that there are differences of the impact of influence factors of innovation success using different kinds of innovativeness measures as a moderator variable. Other studies show that highly innovative projects differ in they way they are managed from less innovative projects. A main flaw of these studies is that they were not specifically designed to analyse the influence of innovativeness on the development and success of projects.

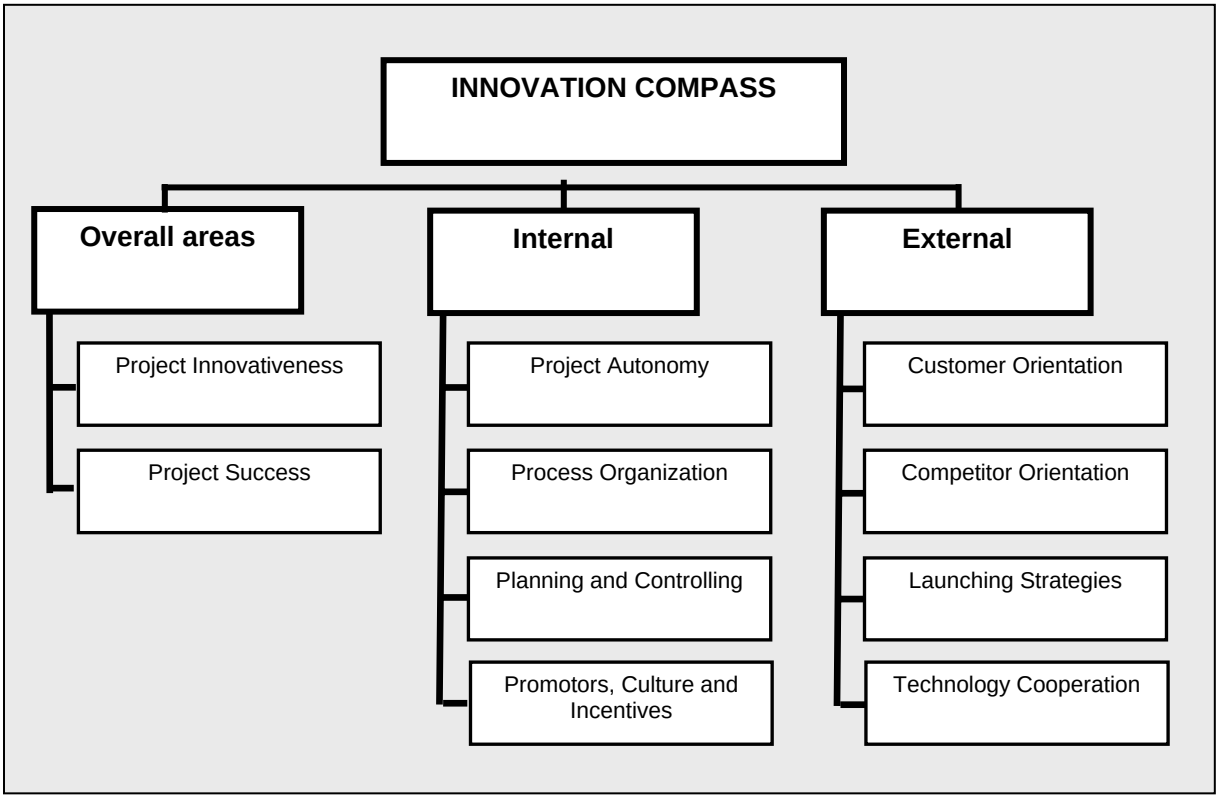
In contrast, our presentation can build on a large longitudinal research project, named INNOVATION COMPASS, has been performed at Berlin University of Technology since 2001, addressing the direct, indirect, and moderating influences of innovativeness on innovation success.

INNOVATION COMPASS had three basic research questions:

1. What are radical innovations: how to measure innovativeness?
2. Do success factors for radical innovations differ: the moderating influence of innovativeness?
3. Which implications for innovation management can be derived?

A main feature of INNOVATION COMPASS is that in defining the unit of analysis and establishing the sample, great care was taken that highly innovative projects were included. The procedure included 1. identification of innovation fields using expert interviews, 2. identification of leading firms in these innovation fields, 3. securing participation of these firms and their radical innovation project, 4. interviews with the technology and marketing responsibles of this project, usually the technology responsible was also the project leader.

INNOVATION COMPASS covers a wide area of themes, see the follwing figure.



In our presentation we want to give an overview how the success factors of these fields influence innovation success, and to what extent and direction their influence is moderated by the degree of innovativeness. The fields stand for seven successfully finished PhD-processes and one successfully finished habilitation thesis. Two other PhDs are in progress.

The measurement of innovativeness is based on a multitrait-multimeasurement-analysis. The resulting five innovativeness dimensions are shown in the next figure.

Degree of Innovativeness				
Technology	Market Barriers	Market Potential	Organization	Environment
new technological	behavioral change	new customer benefits	reorientation of	new infrastructure
squeeze out of old	high learning effort	unique customer	new structure	change in regulation /
quantum leap in	change in value	new customers	new processes	critique in society
new functionality		new market	change in culture	

In our analysis we will address which “laws” that have become popular in the management literature e.g. “stage gate models” and high procedural clarity do not hold for highly innovative projects, but rather show a significant negative impact on innovation success.

Then we will show the implications for further research and for management.