

Formal Knowledge Examination Institutions: A Cognitive and Institutional Perspective

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Agenda

Formal Knowledge Examination Institutions

1. Challenge
2. Theoretical View
3. Aeronautical Sector
4. Regional and interregional perspective
5. Empirical cases
6. Conclusions

Challenge

Knowledge Examination in a new context

Knowledge as a process of transforming data into meaningful information

Innovation as a process of transforming data based on experiences or creative ideas into meaningful new market information (production process, product, organization)

Two dimensions of transformation:

- internal (conscious, sub-conscious)
- Interactive (communication, learning)

Transformation along a knowledge value chain

- Knowledge generation
- Knowledge examination
- Knowledge exploitation

Challenge

Knowledge Examination in a new context

Knowledge examination

= any kind of proof of newly developed knowledge

Traditional perspective: examination based on cognitive proximity or social proximity

Problem: increasing complexity of innovation process with more paradigms, disciplines, organizations and regions involved

Consequence: more standardization and formalization needed

Research question: impact on medium-technology SMEs?

Theoretical View

Knowledge Process

- Knowledge examination as basic prerequisite for any kind of knowledge interaction
 - Filtering of messages
 - Harmonization of filters used by senders and receivers
 - Certainty on qualities of knowledge and basis for feedback processes

- Challenges:
 - Integration of creative knowledge into examination filters
 - Extension of organizations and persons involved
 - Extension of space

- cognitive challenge: prevention of misperceptions
- Institutional challenge: trust in knowledge quality

Theoretical View

Knowledge Process

- Proximity as prerequisite for institutional performance
 - Geographical proximity: F2F contacts, frequency, social control
 - Cognitive proximity: joint cognitive filters, common scientific or technological background
 - Social and cultural proximity: joint norms and personal contacts
 - Organizational proximity: shared formal relations
 - Institutional proximity: shared formal or informal rules for individual behavior
- Formalized knowledge and standards as approaches to enhance organizational proximity
- *Organizational proximity as substitute for geographical, cognitive and social proximity?*

Aeronautical Sector

Framing Conditions

- Diversified knowledge base
 - Engineering knowledge basis
 - Need for connections with science-driven technologies
- Restricted market size and scale economies
 - Oligopolistic market structure
 - Political influences
 - Trade and industrial policy issues
- Relevance of national knowledge bases
 - Military tradition and prestige
 - Professional groups

INTERNATIONALISATION AS CHALLENGE FOR INCUMBENT
FRAMING CONDITIONS

Aeronautical Sector

Framing Conditions

- European specification in the internationalization process: Airbus
 - Cooperation between France, Germany, Spain and UK
 - Historical roots: national shareholders
 - Distribution of work-shares according to financial engagement
 - Decentralized structure of Airbus
 - Centres of excellence
 - Specialization on specific aeronautical systems
 - Centre-specific regional and international linkages
 - Joint international challenges
 - Technological changes
 - International competitors
 - International trade policy and local content requirements

Regional and interregional perspective

Cluster Typology

- Terminology by Bottazzi et al. (2002)
 - Northern Germany Aeronautics Agglomeration
 - Cluster 1: Hierarchical cluster with oligopolistic core = Cabin interior
 - Dominant role of OEM
 - No system suppliers
 - Very small firms without system capabilities and relatively low formal R&D and qualification level
 - Cluster 2: knowledge complementarities cluster = composites
 - science and technology driven cooperation
 - Diversified knowledge base with firms from different sectors
 - Small research-intensive firms with high qualification level

Empirical cases

Formal knowledge and interregional knowledge interaction

Empirical methodologies

- Set of interviews at the different Airbus locations in UK, France, Spain and Germany
 - Suppliers and service firms
 - Administrative authorities
 - R&D centers
 - Financial organizations
- Questions refer to
 - Knowledge management and internationalization strategies in SME
 - Intensity of interaction with regional and interregional organizations
 - Modes of interaction
 - Formalized knowledge and standards
 - Role of legal standards and public authorities as well as certification strategies by OEM

Empirical cases

Formal knowledge and interregional knowledge interaction

Hierarchical cluster

- Organization of knowledge examination
 - Dominance by OEM
 - Increasing role of outsourcing system competencies
 - Public regulation
- Challenges for medium-technology SMEs
 - Required technological infrastructure
 - Required technological and integrative capabilities
 - Required formal and administrative capacities
- Reactions
 - Temporary geographical proximity
 - Intermediaries to develop necessary capacities
 - Holding
 - Consultancy firms
 - Low reputation of universities to overcome these formal barriers

Empirical cases

Formal knowledge and interregional knowledge interaction

Knowledge complementarities cluster

- Organization of knowledge examination
 - Dominance by OEM from different sectors
 - Knowledge management based on joint and non-rival development
 - Interregional knowledge interaction based on cognitive proximity
- Challenges for high and medium-technology SMEs
 - Organizational growth
 - Connection between science and application
 - Exclusiveness of knowledge
 - Independence from single OEM
- Reactions
 - Organizational support by OEM
 - Diversification of applications and research strategies

Summary and policy outlook

Formal examination as major threat for traditional SMEs in hierarchical clusters

Formal examination as challenge for creativity management in value chains

Formal examination as source for new specialized service SMEs and advantage against Rest of the World

Lack of bridging institutions in hierarchical clusters to improve accessibility and receptivity

Thank you for your attention!

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