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Investing in New Technology - A Case Study of a Food Processing Company

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The Purpose

This paper examines new technology investment decision-making process on two levels combining traditional **innovation adoption** and **innovation diffusion** approaches by **network and interaction approach of IMP-Group**.

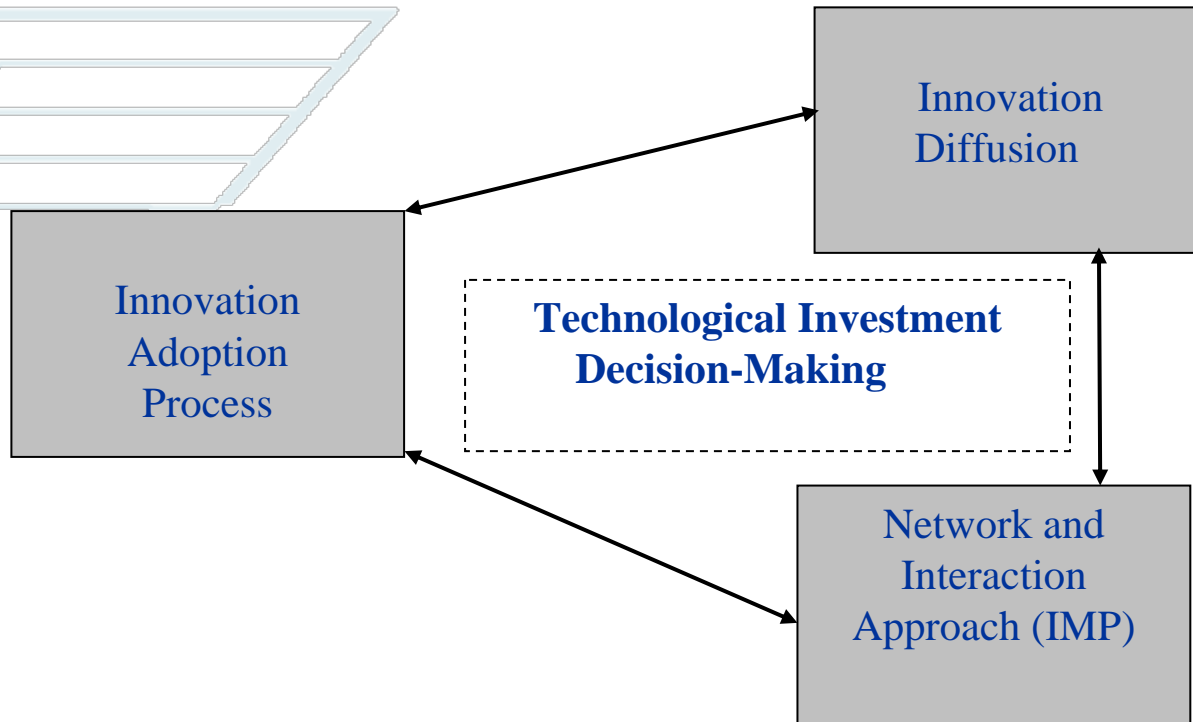
Conducting this we aim to cross-fertilize the chosen approaches and produce more **comprehensive** and **integrated understanding** to conceptualize investment decision-making processes on new technology.



Framework of Analysis

Micro-Level
(intra-firm dynamics)

Macro-Level
(inter-firm dynamics)





The Theoretical Fields in a Nutshell

Innovation Adoption

- sequential, serendipitous, and political models

Innovation Diffusion Approach

- understands single adoption decisions with reference to other adoption units' adoption decisions within the social system. The information sources can be put in social system internal sources (opinion leaders) and external sources (change-agents).

Network and Interaction Approach (IMP)

- “No business is an island” (Håkansson & Snehota 1989) -> No Decision-making process is an island!
- Concepts of embeddedness, interconnectedness, relationships, network position, ARA-model



Empirical Part

- To respect the wish of anonymity of the seller and the buyer in this case we name the investor company as **FoodCo** and the supplier company as **TestCo**.
- The investment decision-making process took place during 2002-2003 at one production plant of FoodCo that is one of the biggest food processing concerns in Finland.
- The product to be invested in was a quality testing method to assure the microbiological safety and purity of final products. The method consists of a testing machine and chemical reagents that are used to perform test by the machine.



Empirical Part

- The data consists of eight interviews that have been collected between 27.9.05-17.3.06.
- Total number of informants was **6** and the number of interviews was **8**. Five of the informants composed a project group at FoodCo and the sixth informant was the CEO of TestCo and the person who sold the method and did the project together with FoodCo.
- Two (he and she) of five of the informants at FoodCo were specialized in microbiology and worked at the **central R&D laboratory** of the concern. Both of them were phone interviewed twice. The rest three at FoodCo worked at the **production plant**. The laboratory worker who did all the practical testing and the project manager were interviewed together. The third person who worked as quality development manager was phone interviewed. The CEO of TestCo was interviewed twice.



Empirical Part

- The production at this plant **was known to rise** and the production plant needed to find a solution to **adapt to increasing production**. The microbiological analytics of final products to assure their quality was especially a bottleneck in this new situation.
- At the production plant they were aware of faster microbiological quality analyzing methods already since 2000 mainly because of active suppliers who had approached the plant. Before this new situation this option was not considered seriously even though it might have been beneficial investment.



Empirical Part

- The method felt promising from the very beginning and the benefits it could bring in sounded lucrative.
- The production manager (who became project manager in this project) made a project plan which included the aims of the project, project personnel, the supervisory body and schedule.
- The plan was proposed to FoodCo central administration and then a license to start the project was given.



Empirical Part

- After the establishment of the project at FoodCo in March 2002 TestCo performed a testing period in order to adapt and fine tune the method for the products to be tested at the production plant.
- In parallel with this testing at TestCo FoodCo found out other possibilities and suppliers. In addition to TestCo another supplier whose product was based on a different technological platform was considered preliminary, but never tested due to a high price and lack of references.
- After TestCo method was adjusted for the FoodCo products the testing period started at the production plant in August 2002.



Empirical Part

- The new method was run in parallel with the old one in order to do comparisons until January 2003. The number of tests, as being 10 000, was so high that the results could be statistically generalized and analyzed.
- After the testing period it seemed that the method is enough specific and sensitive for the purpose.
- Supervisory board accepted the project and then the production plant was capable to do a proposal of investment to the FoodCo central administration.
- After the approval the machine that was leased until this far was bought and then started to be used in analyzing final products without the older method as a backup since April 2003.



Innovation Adoption

- Adopted microbiological testing method is an innovation from the FoodCo's point of view. It changed the analyzing procedure dramatically bringing in huge benefits.
- **Sequential models** describe adoption as terms of phases of decision-making process. The original idea that it is more or less a matter of time when a new innovation became adopted (or rejected) by a certain unit of adoption and a linear path to this decision cannot be so straightforwardly confirmed.
- As FoodCo was aware of these faster methods since 2000 this awareness did not initiate a clear decision-process. FoodCo also considered other option supplied by another supplier to meet their need. Thus the process was more to find a solution to a problem not to decide on this specific product. Or as the other of microbiologists said: *"If it would not have worked the ongoing search process would have continued."*



Innovation Adoption

- **Serendipitous models** highlighting interplay between organization and its environment producing adoption as a result of this fits well with the empirical evidence here.
- A concrete starting shot for the project was this production redesign on FoodCo concern level and then active marketing by TestCo at the same time. In this sense also the randomness typical for serendipitous models is accentuated over rationality. Although the benefits were known already before the redesign decision, the adoption was not concerned seriously even though it would have brought benefits in terms of time and labor saving in any case even without an increase in production.



Innovation Adoption

- Some characteristics of **political models** emphasizing the social interaction and power hierarchy during the adoption process can be found from the empirical evidence here.
- As FoodCo being a centrally administrated concern the examined adoption process at the production plant followed strictly the formal procedures for that kind of project. These guidelines for different types of projects are defined in certificated ISO 9001 quality management system.
- The power relationships were shown particularly on the role of the central R&D laboratory in the project as it had a power to kill the project already before the testing phase if it would have seemed unpromising. In this sense the microbiologists were *approvers* of technology here. In addition to microbiologists as approvers of technology the roles within the plant also structured partly as these models suggest.



Innovation Diffusion

- The main competitor was an **opinion-leader** for FoodCo as it was part of the social system and horizontally at the same level with FoodCo. TestCo represented a **change-agent** as promoting the change of the older method to a one it supplies. On the other hand TestCo was also an opinion leader in a sense that it was a user of the machine in the field of their commercial analytical services and so earlier adopter than FoodCo. The other competing supplier was a change-agent pro another innovation.
- Innovation diffusion being a theory of communication is powerless to understand deeper reasons for communication and other type of interaction between the actors related to investment process at FoodCo.



Network and Interaction Approach (IMP)

- The motivation for the competitor to share experiences and give hints to FoodCo was based on informal personal links but also on their mutual benefit to avoid quality problems that would damage them both in terms of bad reputation and consumers' tendency to associate single actor's quality problems to the whole industry.
- In this sense the both firms are **embedded** into a certain environment and their actions are **interlinked** together causing direct and indirect effects for themselves, another one or both of them.

(FoodCo <> Customer <> Competitor)



Network and Interaction Approach (IMP)

- Due to these interrelations the microbiologists participate regularly in the meetings of an informal consortium of the industry on Nordic countries level. This exchange of experiences derives from an idea that quality is not an area where to compete but rather a prerequisite for the whole industry's welfare.
- These networking activities connect the actors together and to each others resources as **ARA-model** explains and as the other of the microbiologists put it:
- *“Networking is a good thing because you can't do everything on your own. It is cheaper to all that we listen the other's experiences and change them instead of everybody would try on their own. “*



Network and Interaction Approach (IMP)

- The importance of **references** in this case can be understood through a concept of network position.
- The reference list gave to FoodCo a concrete hint or proof of TestCo's prestigious **network position** within different networks performing similar activities or on the same industry as FoodCo.
- On the other hand the TestCo's high commitment to the project derived partly from the reference value i.e. FoodCo as a reference would facilitate selling the method in Finland in a future.



Discussion & Conclusions

- **Relationship** establishment process, not only a single transaction between FoodCo and TestCo
- Relational bonds (attraction, trust, commitment)
- Tailoring before the use
- Problems with diffusion concepts (social system, unit of adoption)?



Discussion & Conclusions

- Although a role of a more holistic approach provided by the network and interaction approach has been emphasized in our discussion here, this is not to be interpreted that we ignore relevancy of intra-firm oriented approaches.
- There is a huge gap in our understanding of what happens within a firm when they decide on a new technological investment.
- *Adoption process*, an organizational decision process from its outset until the decision to adopt an innovation (see e.g. Klein & Sorra 1996, 1055; Woodside & Biemans 2005, 385). The processes that follow this organizational adoption decision process are concrete attempts to adapt to this adopted change
- The collaboration over traditional industrial boundaries?