

7th European Conference on ICT for Transport Logistics

Title: Pathways to logistics innovation-challenges, barriers and opportunities: How to get around the stones on the road to innovation uptake in logistics?

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Innovation process

public financing support received for logistics-related innovation activities (% of R&D expenditures)

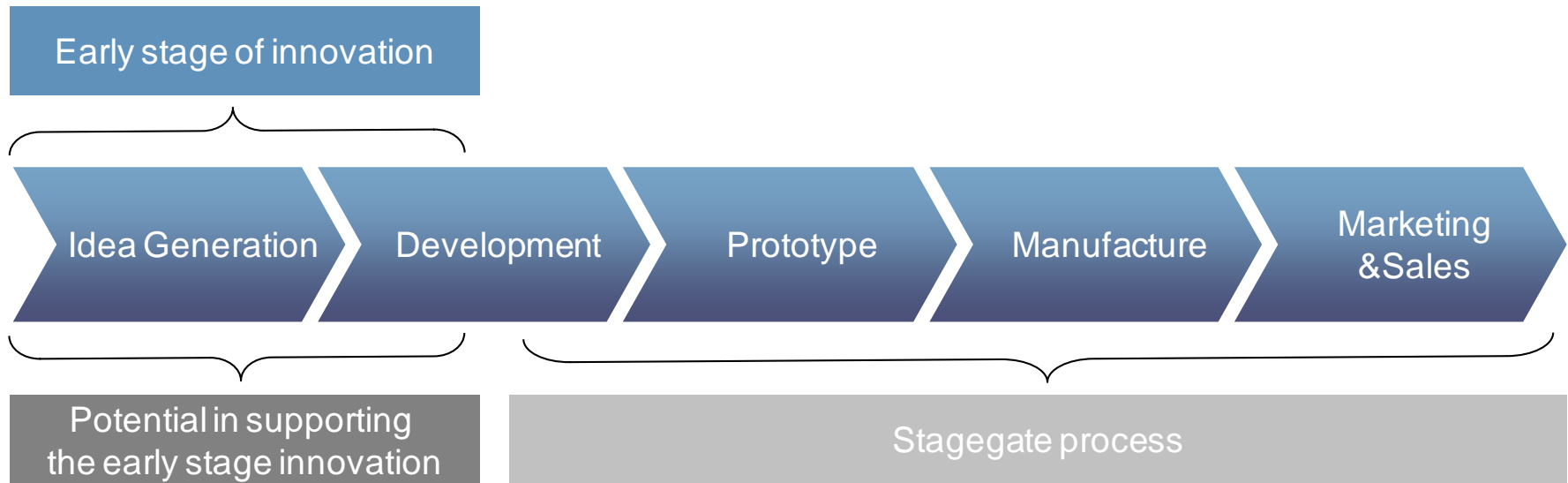


Figure 1: The Innovation Process (Rothwell 1992)

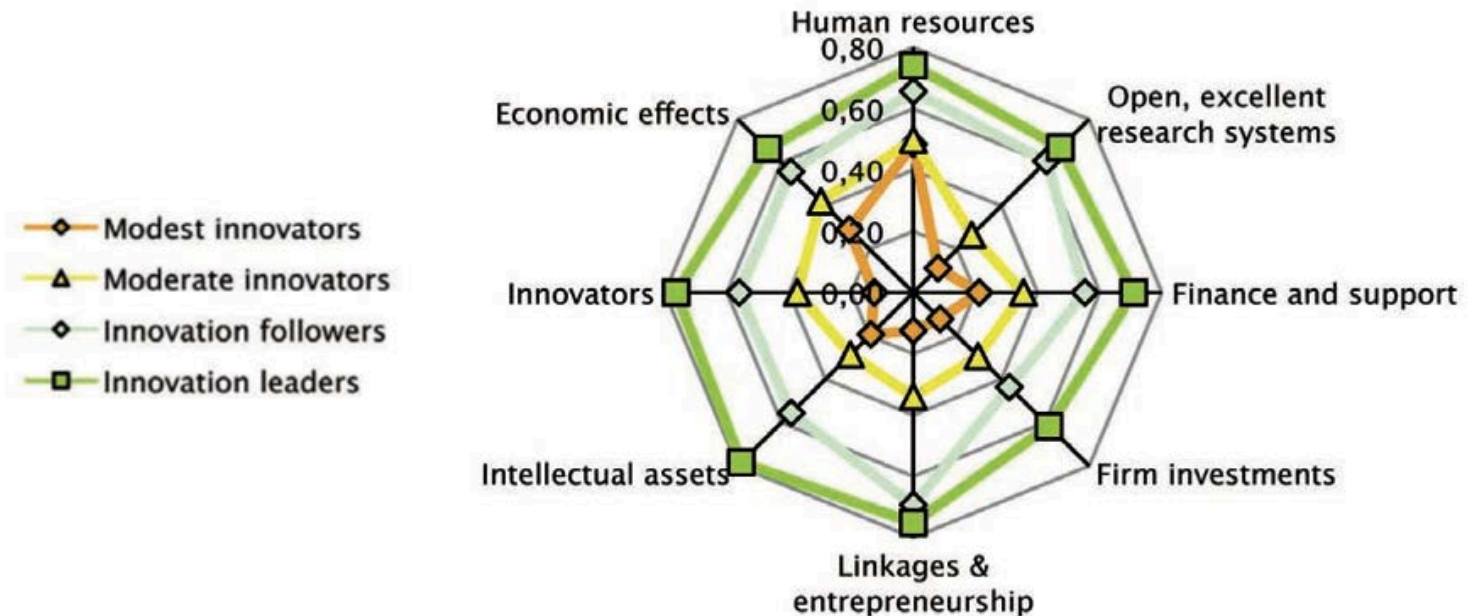
logistics-related R&D expenditures (% of value added)





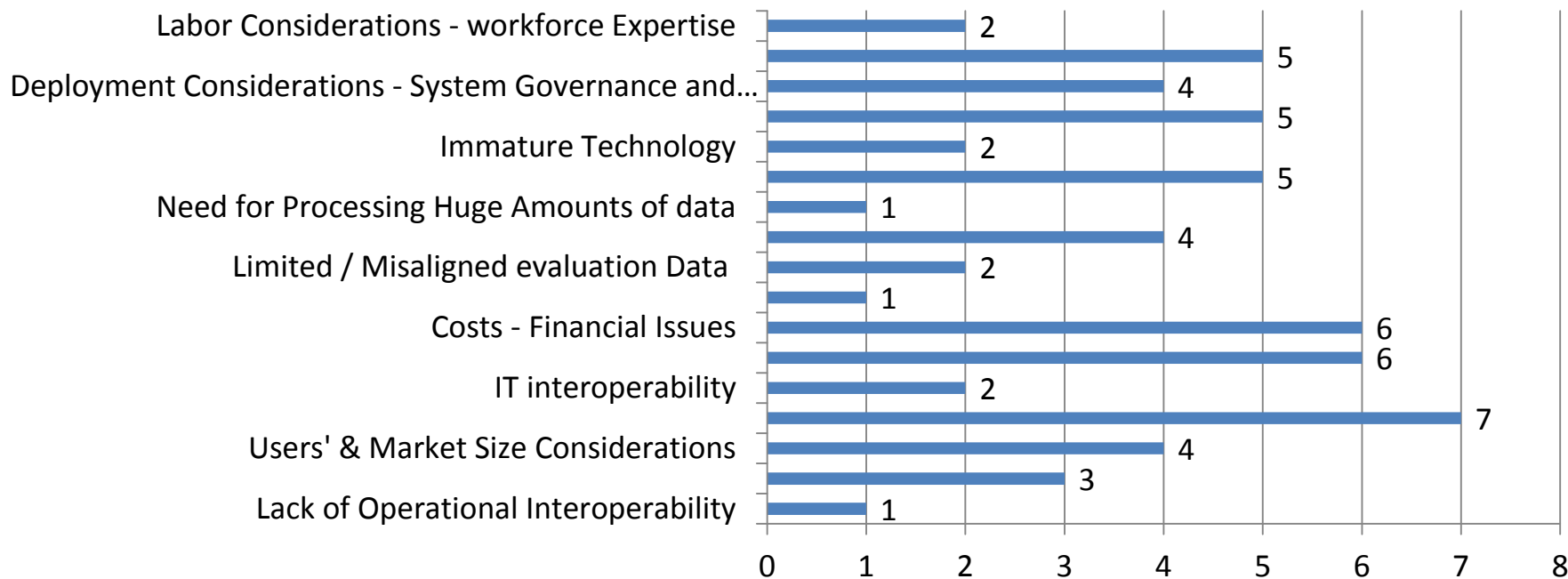
Ideas for alleviating the barriers

1. Use KPIs for measuring innovation in all three pillars
 - Similar to the Innovation Union Scoreboard
2. Suggest specific actions at different level aiming at accelerating market penetration of logistic innovation:
 - policies, regulatory measures and financial mechanisms, socio-economic, innovation management aspects



Outcome Kahoot!

Barriers marked as high priority





KPIs- do they help?

- KPIs- can they help to be aware of challenges in innovation uptake
- Which KPIs are useful for measuring innovation uptake
- Which for measuring improvements of drivers or alleviation of barriers
- How can these KPIs be used for assessing innovation uptake in different context





Lack of operational interoperability

- Number of agents in supply chain with an electronic data interchange: $(\text{Number of agents with electronic data interchange} / \text{Total number of agents})$
 - This indicator evaluates the numbers of companies that are electronic connected providing information about the execution of the processes. Increment for Supply Chain Visibility
- New business model sustainability (% of companies still exploiting a business model introduced 2 years ago)
 - This is an innovation outcome indicator. It complements the view of the previous indicator, providing information on whether a specific new business model introduced, it is still being exploited and has not been abandoned shortly after its market introduction.
- New business model introduction (% of companies having introduced one)
 - This is an innovation outcome indicator. It captures the extent that companies innovate through the introduction of new business models.



Lack of legal/institutional framework

- **Number of legal/institutional gaps identified:**
i.e. number of areas where the existing legal/institutional is not adequate for supporting logistics innovation (e.g. balance between horizontal cooperation and trust formation, compensation of city-dwellers and cargo insurance at the last mile, etc.)





Users' & market size considerations:

- Number of users exposed to new service/product
- User acquisition rate



Reliability – quality - accuracy of data

– Percentage of false data identified





IT interoperability

- Number of established interfaces/information exchanges re-used
- Number of proprietary systems integrated
- Number of agents in supply chain with an electronic data interchange: (Number of agents with electronic data interchange / Total number of agents)
 - This indicator evaluates the numbers of companies that are electronic connected providing information about the execution of the processes. Increment for Supply Chain Visibility



Lack of cooperation between stakeholders

- Number of agents in supply chain with an electronic data interchange: (Number of agents with electronic data interchange / Total number of agents)
 - This indicator evaluates the numbers of companies that are electronic connected providing information about the execution of the processes. Increment for Supply Chain Visibility
- Cooperation agreements on innovation activities with other supply chain members (% of companies having realised one)
 - Using cooperation has been proven as a main enabler of introducing innovations. This is even more important in the case of new business models, where many of these go beyond the boundaries of a single organisation. Also this indicator is being used by various existing innovation frameworks.



Cooperation 2

- Performance / gain sharing alignment among cooperating supply chain actors (& of companies having realised one)
 - Aligning performance measures and establishing clear gain-sharing among cooperating supply chain members are among the most important elements for a sustainable cooperation. This is especially relevant to innovative business models where their sustainability is a critical requirement. This has been identified also as an existing barrier.
- New business model introduction (% of companies having introduced one)
 - This is an innovation outcome indicator. It captures the extent that companies innovate through the introduction of new business models.





Infrastructure issues

- Reduction in Deployment/Operational costs for new services/products





Limited/Misaligned evaluation data (e.g from pilot implementation)

- Number/Period of field tests
- Number of requests for product change/update addressed





Complexity in administration

- Needed period for new product/service deployment into market/client





Lack of awareness

- Number of new services/products tested/evaluated
- Participation in international conferences





Immature technology

- Number of identified software/hardware faults
- Effectiveness of the execution of the prototypes: (Finished Prototype Number Correct and Timely / Total Approved Prototypes)
 - The effectiveness in relation to the proper culmination of innovative prototypes are developed and finally approved





Privacy - data security - security issues

– Number of security threats identified/addressed



Deployment considerations – system governance and ownership

- Effectiveness of the execution of the prototypes: (Finished Prototype Number Correct and Timely / Total Approved Prototypes)
 - The effectiveness in relation to the proper culmination of innovative prototypes are developed and finally approved.
- Successful Innovation Index: (Number of Innovations successfully implemented / Total Innovations)
 - Evaluation of the efficiency in the implementation of innovative projects.
- New business model introduction (% of companies having introduced one)
 - This is an innovation outcome indicator. It captures the extent that companies innovate through the introduction of new business models.



Lack of Standardization

- Number of new standards introduced
- Number of international standards used in product development
- Number of processes executed following industrial standard.
 - This is an indicator to evaluate the number of processes that are developed following standard procedures for the data (EDI, XML...) and for the freight (Standard containers,). This indicator represents the Supply Chain Adaptability and Flexibility



Labor considerations - workforce expertise

- Percentage of ICT personnel involved in product development per education category
- Logistics-related employees with a tertiary education (%) workforce skills
 - Education is considered among the main enablers of innovation. It is an indicator already used in other established innovation frameworks, thus an easy association can be established with these (i.e. for introducing the Logistics Innovation KPIs to existing surveys).





Costs - Financial Issues:

New product/service development costs

- % of cost reduction due to innovative process (Initial Cost – New Cost) / Initial Cost
 - Measure of the cost reduction in the warehousing, distribution and transport processes with new process innovation up taking.
- Innovation Cost-Benefit. Revenue (Innovation / Investment in Innovation)
 - Evaluation of the relationship between the investment cost and the benefit derived from the innovation process (Financial barriers)



Thank You!

Any question?

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