
DRIVERS AND BARRIERS TO INNOVATIVE LOGISTICS PRACTICES

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Abstract: “Business as usual” way of practicing could be summed as energy intensive, inflexible mono-modality, often structured in a straight push flow that usually generates itself large amounts of production waste. In opposition to this “business as usual” definition, innovative practices are found. Innovation is not necessarily something new to the world but new to the user. Although research on logistics innovation is still in its infancy, efforts are being put on defining and identifying innovation in the logistics sector by professionals and academics worldwide. Innovative logistics practices, ILP, could be considered as a key piece of this necessary and on-going supply chain modernization. The purpose of this paper is to investigate ILP in the studied EU projects and to identify drivers and barriers for the implantation of the same.

Keywords: innovative logistics practice, drivers, barriers, EU projects.

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1. INTRODUCTION

Some experts explain “evolution in LP” as an anticipation to the dissatisfaction of the customer, which makes necessary the search for new approaches to the situation often based on model expectations rather than empirical, yet not available, results. These changes are described as purposeful and goal-oriented [1], which sometimes represent window options for “less suitable” or unsustainable solutions. The here-called “less suitable” unsustainable practices are often just old LP business models that are systematically applied in relevant stakeholders’ facilities until socio-economic factors become an unsolvable incompatibility to “business as usual”.

This definition of “business as usual” way of practicing could be summed as energy intensive, inflexible mono-modality, often structured in a straight push flow that generates itself large amounts of production waste. These practices shall be considered obsolete given the current technological improvements available and unacceptable from the sustainability perspective.

Contrary to this “business as usual” definition, innovative practices are found. It is interesting to remark that “innovation is not necessarily something new to the world but new to the user” [2]. Although research on logistics innovation is still in its infancy [3], efforts are being put on defining and identifying innovation in the logistics sector by professionals worldwide. Logistics innovations practices, ILP, could be considered a key piece of this necessary and on-going supply chain modernization. Logistic value chain that entails ILP at which flexibility, optimization and multimodality are some of the main desirable features. This paper aims to investigate about ILP and their interaction with the relevant stakeholders in order to identify drivers and barriers for ILP through EU projects.

Data collection method applied was literature review, i.e. review of 39 different EU projects that were of interest for study in the present LOGINN project in which authors of the paper are involved.

2. FRAME OF REFERENCE

ILP are currently gathering the EU attention as researchers and practitioners develop new business models across international companies with their

correspondent impact, and often, large competitive advantage increases. These stories of success are often shown by the media and awarded by public opinion, which establishes such innovative companies as good examples to the rest. This rebound effect is therefore a good business strategy nowadays. Such experiences are labelled as “best practice” by the experts. This term is still currently being developed, and could be summarized as a name to describe the most convenient ways of doing things to contrast “inferior” practices.

A “best practice” within ILP could be defined as a practice that is feasible, proven and known by its success, independently evaluated or that has entitled a strong high-level outcome testimony [4]. Through the analyses of these successful experiences, and the previous testimony of experts, it can be highlighted that supply chain represents significant opportunities for potential improvements [1], making of special interest to explore further the circumstances that contribute to the adoption of these practices.

Nevertheless, whether or not something is a best practice will depend on the context in which it is applied. The projects on which this research is based have been selected by their proven “best practice” implementation following this chain. All selected projects involve innovation [2], efficiency improvement and productivity increase for freight transport despite the large differences in the nature of each of them.

Some of the most relevant areas have been identified and classified as follows:

- E-Freight: the challenges arisen by societal development have created a new scenario for international freight transport. The determinant characteristic of eFreight is the maximisation of the benefits from information technologies.
- Co-modality: this array of modality is described in contrast to a seamless use of several different modes in one chain. Co-modality is a step further to achieve the efficiency and integration by smoothing the transit from one mode to another towards the optimal and most sustainable utilisation of resources.
- Urban Freight Transportation, UFT: these activities are concerned with delivering and collecting goods in urban centres. Urban freight deals mainly with the end of supply chain, being mostly configured by small loads in frequent trips and resulting in large quantities of vehicle kilometres.

- Intralogistics: describes the organisation, realisation and optimisation of internal material flows and logistic technologies along the complete value-added chain. These practices cover internal flows between hubs such as distribution centres, airports, seaports, etc.; as well as their related information flows.

Figure 1 summarizes the relevant key concepts that entail this classification.

<p>eFreight</p> <ul style="list-style-type: none"> • IT based • Information enhancement • Standardised 	<p>Comodality</p> <ul style="list-style-type: none"> • Multimodality • Compatibility • Flexibility
<p>UFT</p> <ul style="list-style-type: none"> • Local solution • Air quality • Optimisation 	<p>Intralogistics</p> <ul style="list-style-type: none"> • Communication • Organisation • Optimisation

Figure 1. Key concepts of ILP practices

This classification is maintained through the project and during the analyses of the ILP concerns for an improved experiences when targeting common drivers and establishing specific strategies to overcome barriers.

3. SURVEYED PROJECTS

- BaTCo
- BestLog
- C-LIEGE
- CASSANDRA
- CityLog
- CITYMOVE
- CIVITAS
- CODE24
- COFRET
- COMCIS
- DELIVER
- E-Freight
- ECOSTARS
- eMar
- EUROSCOPE
- FLAVIA
- FREIGHTWISE
- FREILOT
- Hinterport
- iCargo

- Logistics for Life
- SAFEPOST
- SCANDRIA
- SMARTFUSION
- SPECTRUM
- STRAIGHTSOL
- SUGAR
- SULOGTRA
- SUPERGREEN
- SuPorts
- Support
- SURF
- SUSTRAIL
- TAPAS
- TRAILBLAZER
- TRANSITECTS
- TURBLOG
- UNDA Project
- VIACOMBI

4. FINDINGS

Across the EU territories in the scope of the research, different countries and types of projects have different relevance. From a total of 39 different projects, 41 projects accounting, since some were divided into subprojects. Table 1 illustrates the occurrence of the different types of ILP relevant for the research. In this table, it can be seen how UFT related projects are a great interest to the different stakeholders and a sector where efforts still need to be put, specially caused for urban health and safety concerns [5].

Table 1. Number of exclusive (specific for certain ILP) and related projects to each type of ILP

Type	Exclusive projects	Total related projects
E-Freight	6	13
Co-modality	8	16
UFT	16	19
Intralogistics	1	5

It is also remarkable how intralogistics projects have more presence when related to other types of ILP. This fact is sourced in the internal nature of intralogistics which makes this type of ILP of special interest in complete modernisation plans that are included often together with eFreight projects.

During the survey of the project list, it could also be noticed the following funding organisation's distribution, as in Table 2, with the predominant appearance of the European Commission. Following sections of the present research deal with the importance of this institution in regards to ILP.

Table 2. Funding entities to ILP projects

Funding entity	Number of projects
EC	29
ERDF	6
INTERREG IVB NWE	4
UNDA	1
BSRP	1

Moreover, a map of the occurrences of ILP relevant surveyed projects has been drawn as in Figure 2. Hereby, some resemblance with the main historical corridors can be highlighted. These historical via are the English Channel and the north-south corridor that joins Scandinavia with the Mediterranean.

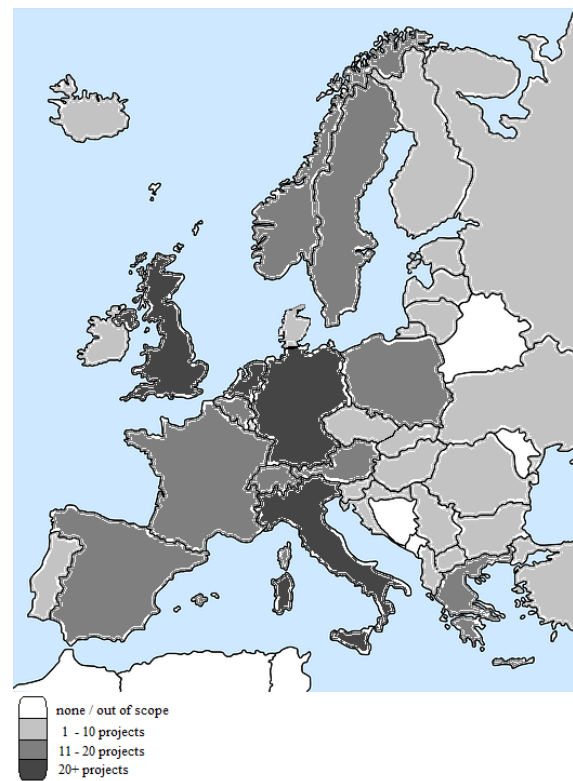


Figure 2. European ILP occurrence map

Some other relevant countries are Poland and Spain. These territories, historically dominated by road traffic and with relevance for the access to Africa and Asia, are of special interest as they would set an example for the modernisation of other European areas such as Eastern Europe. This modernisation can also be illustrated as in Figure 3 where the trends on ILP occurrence are shown by year.

ILP in Figure 3 is understood as the time development of LP where after a period of learning [6] from 1996 to 2008, finally the concept develops and gets the dimension of “best practice” (expressed as the larger number of relevant successful occurrences).

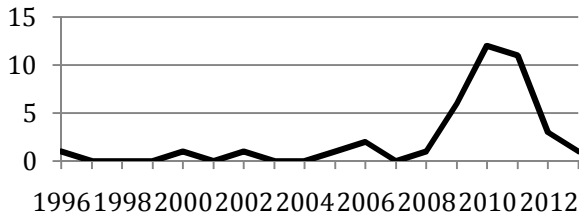


Figure 3. Time developing of ILP graph

4.1 Summary of the drivers

Figure 4 shows occurrence of 4 main categories of drivers identified in the surveyed projects.

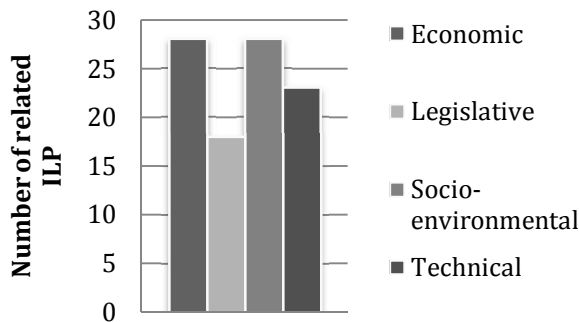


Figure 4. Drivers occurrences per type of ILP

It is worthy to highlight that socio-environmental concerns are of the same relevance as economic drivers.

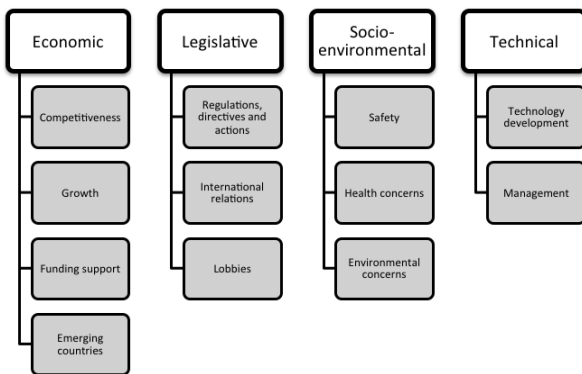


Figure 5. Drivers overview

4.2 Summary of the barriers

Figure , illustrates on the accounting developed among the ILP selected projects. Standardisation and cooperation appear as common lacking aspects in surveyed ILP.

Standardisation lacks could be understood of part of the process of implementation of innovation where first experiences set the basis for regulations that tend to benefit and speed up the following experiences. On the other hand, lack of cooperation is an overall negative aspect in regards to ILP or the implementation of any sort of project due to the necessity of involved actors to work together. These

barriers are further characterised and analysed in order to reflect on positive overcoming experiences of the same and how to export overcoming techniques in order to benefit the entire ILP scope.

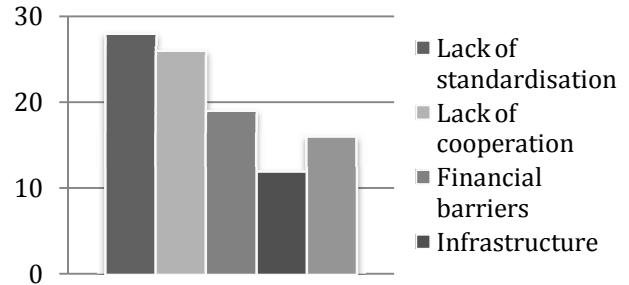


Figure 6. Barriers occurrence per type of ILP

5. OVERCOMING THE BARRIERS

The problem of spreading innovations and best practices is not new. For over 50 years, organisations have been aware of the paradoxes of innovation that despite the success in one location fail to spread in other environments and remain as “islands of innovation” [7]. As a result, efforts are duplicated, cost reduction in large scale predictions does not take place and knowledge is put in risk given the perceived market failure. The challenge for management lies here, in simultaneously coordinate what already is in place (staff, processes, infrastructure, customers) while implementing something “unknown” and place the right amount of resources in it [8].

Innovation is also associated negatively with declining productivity [9]. The probable reason behind this is the lack of results in forehand when advocating for the implementation of an ILP and the multidisciplinary projects difficulties that arise during these procedures that tend to be associated to innovation when they do in fact belong to the entire functioning of the sector. Innovation should be understood as an asset for behavioural change [9]. This change given the multidimensionality of the sectors involved (population, organisations, technology or methodology) is expected not to happen instantly, fact that must be act in detriment of ILP. These factors are compiled in Figure 7.

A good strategy towards conquering the behaviour of population starts by enabling information and making a great effort of auto-criticism and transparency. Once population trust a technology and in the power of decision making of their representatives, it is more likely to obtain external support, especially in policy makers, industry and university. And when the framework is established, it is time to maintain the level of trust and take action with optimized timeframes and

projects that will not wear off the effects of the support achieved so far.

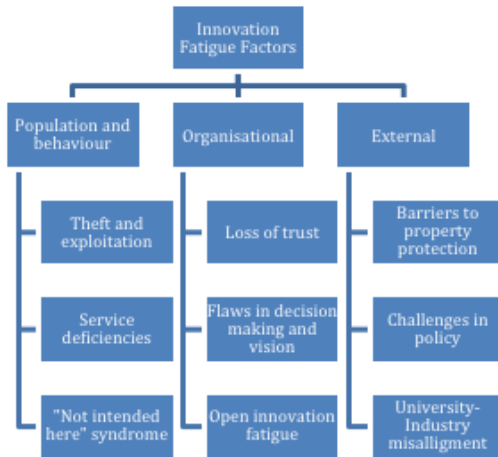


Figure 7. Innovation fatigue factors [9]

One solution is in peer-to-peer learning based on open scenario networks, at which the users must contribute equally sharing their past mistakes and performance indicators as well as the methods by which they have achieved a successful monitoring of the same [7]. The practice of sharing mistakes is proved as value adding practice.

There is a need for top-level support, as it has been proved that technical and supply chain management solutions do exist and are scattered in a broad band of available products with more or less successful experiences. Anticipating the policy measures in high spheres and demanding engagement from the member countries could entail a powerful driver towards ILP diffusion. This is especially remarkable for the development of emerging European economies given the great economic growth and the investments that take place continuously. It is in these economies where all factors are currently aligned and only need political and public involvement in order to achieve sustainable best practices. This has a great positioning opportunity for the future that could set the bases for emerging economies all over the world.

Last but not least, international culture difference related barriers monitored during this project have been already targeted by the experts. It is recommended to prioritise a healthy organisational environment focusing on emotional intelligence and targeting the differences between sectors, groups or individuals as tools towards overall organisational strengthening rather than obstacles [10]. Local/regional specific knowledge transfer teams are highly recommended to achieve the best results out of the integration policies.

6. CONCLUSION

With current rates of technology and supply chain techniques development, it must be highlighted that solutions are abundant and in place for practitioners to implement. As of the drivers that may help the development of the projects, it has been found that there is a wide spectrum of funding support (private sector, EU programs, and regional developing programs) and research is carried out continuously by academia.

The EU is a relevant stakeholder in the field of ILP, as it represents the main public funding scheme (with several programmes in place) as well as a source of academic support and a great ally in term of information and networking support. Despite this great interest by the lead authorities of the Union, it has been observed that there is a gap of commitment at high national levels. This is expected to occur given the nature of EU policies regarding the socio-environmental advantages of ILP. When the documentation in place is only recommending to take action, while there is a lack of involvement from the economic sector (decreased implementation of ILP since 2009 with the start of the economical EU “crisis”) the effect that results is a delay in the projects or in their continuity.

In regards to the political context of EU, it has been highlighted that there is a need for long term policy measures of the administrations in regards to socio-economic prospects. It is fundamental to regard the long term perspectives and uncertainties as a constructive foundation for the competitive advantages of ILP already nowadays and in the long run. The featured narrow perspectives, associated with political residence time, are not compatible with the great involvement and investments necessary for the spread of ILP across the European territory. Despite efforts are put in place nowadays in the shape of socio-economic framework policies, the pace at which they happen is slow for a complete sync. This policy-making period should be speed up and count with an increased compromise from the union members in order to start this long-term venture. Effects will not be immediately foreseen in many cases and in others implementation occurs without accurate predictions, reasons why long term perspectives must be in place and become public strategies for the entire society and industry to benefit from it.

Public opinion often plays an important role in supporting technology and industry’s vision towards implementation. Population needs to be well informed during the design of ILP in order to engage their support rather than discomfort at the same time

that transparency is reinforced in all levels of society and administration. The power of good press references must not be underestimated.

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REFERENCES

- [1] Su, S.I, Gammelgaard, B. and Yang, S-L. 2011. "Logistics innovation process revisited: insights from a hospital case study", *International Journal of Physical Distribution & Logistics Management*, Vol. 41 Iss: 6, pp.577 - 600.
- [2] Flint, D. J. et al., 2005. "Logistics innovation: A customer value-oriented social process". *Journal of Business Logistics*, 26(1). 113-147.
- [3] Wagner, S., 2008. *Innovation management in the German transportation industry*. *Journal of Business Logistics*, Vol 29 No2, pp 215-31.
- [4] Paul, D., 2009. What is best practice? A topic article within the outcomes theory knowledge base. *Outcomes Theory*.
- [5] European Commission, 2005. *Thematic Strategy on Air Pollution and Clean Air for Europe*. ec.europa.eu.
- [6] Kemp, R., 1994. *Technology and the transition to environmental sustainability*. Butterworth-Heinemann Ltd.
- [7] Zell, D., 2001. *Overcoming barriers to work innovations: Lessons learned at Hewlett-Packard*. Elsevier Science, *Organizational Dynamics*, Vol. 30, Issue: 1, pp.77-86.
- [8] Yorton, T., 2006. *Overcoming Barriers to Innovation: Balancing Management and Creation*. Wiley Periodicals, Inc. www.interscience.wiley.com.
- [9] Lindsay, J., Perkins, C., & Karanjikar, M., 2010. *Overcoming obstacles to Innovation*. ProQuest, *Chemical Engineering Progress*.
- [10] Rivera-Vazquez, J. C., Ortiz-Fournier, L. V., & Flores, F. R., 2009. *Overcoming cultural barriers for innovation and knowledge sharing*. *Journal of Knowledge Management*, Vol.13, Number 5.