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Report. List of indicators and progress markers characterizing OI (Open Innovation), Innovation and Global Innovation management curricula

*D4.3 Indicators and progress markers for OI in HE
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Abstract

This report addresses indicators and progress markers characterising Open Innovation (OI) in order to provide a methodology for the analysis of a program on OI in Higher Education curricula. The focus is on indicators that facilitate the open innovation process in organisations and which are expected to be useful for the design, development, analysis and implementation of a Higher Education curriculum focussed on open innovation.

Indicators are 'signs', 'processes' or 'action' that is visible and that may be measured. They enable the recognition of OI practices and they provide visible evidence of these practices that may be critically assessed. The aim is to provide insights and an increased understanding of the key indicators which Higher Education curricula need to take into consideration when designing and analysing programs and which are appropriate for the needs of organisations. The approach is needs-driven, taking into account all the stakeholders involved in the development process.

Introduction

This report addresses indicators and progress markers characterising Open Innovation (OI) in order to provide a methodology for the analysis of a program on OI in higher education curricula. Although it is not specifically directed towards a particular academic degree, it provides an initial framework which has the potential to be developed in line with the level of various degrees, i.e., Diploma, Bachelors, Masters, MBA or PhD (see Appendix 1: *List of key indicators and relevance for HE Programs at different levels* for a suggested distribution of the indicators related to various program levels).

The assigned area for research was rather broad, therefore, the researchers decided to focus mainly on indicators that facilitate the open innovation process in organisations which are expected to be useful for the design, development, analysis and implementation of a higher education curriculum focussed on open innovation.

This does not exclude the use of the material presented here for application in training programs in organisations. The main aim is to provide insights and an increased understanding of the key indicators which higher education curricula need to take into consideration when designing and analysing programs and which are appropriate for the needs of organisations. The approach is needs-driven, taking into account all the stakeholders involved in the development process.

Indicators are ‘signs’, ‘processes’ or ‘action’ that is visible and that may be measured, eg., patents registered as a result of collaboration with other individuals or organisations outside the region or territory. Indicators may be assessed using either qualitative or quantitative research methods. Indicators assist in the recognition of OI practices and they provide visible evidence of these practices that may be critically assessed. In order to be used as progress markers, OI indicators should be set in place prior to implementing a curriculum in Higher Education or before the innovation process commences in an organisation. They should be accepted by all stakeholders involved in the process. Indicators may also act as milestones to assist progression from one stage of development to the next, both with regards to curricula and with regards to the implementation of OI in organisations.

Indicators or progress markers for innovation (and particularly for OI) are not a recent phenomenon. Schumpeter (1943) had already listed clear vision, strong leadership, and close collaboration as components for cooperative entrepreneurship leading towards innovation. He had anticipated the fact that collaboration would move beyond company borders (Schumpeter, 1943). Chesborough (2003) later promoted the topic of open innovation with its emphasis on external collaboration.

Open innovation involves the transfer of ideas and knowledge beyond traditional limits. It may operate in two ways, either inside-out (through the transfer of expertise or the sale of patents) or outside-in (through the purchase of patents or the use of external expertise). It often involves collaboration amongst individuals and communities that may be located at opposite sides of the world, possibly including the management and leadership of virtual teams. Leadership plays an important role in the process and, as delineated later in this report, is one of the key factors for successful collaboration and for creating, establishing and sustaining strategic alliances.

Knowledge creation and knowledge transfer, which may be more efficient through engagement with external sources, are crucial for successful open innovation. Knowledge may be acquired as a result of:

- purchasing (through, for example, knowledge brokers or IP auctions)
- sales of IP
- sub-contracting (often allocated to established universities of research institutes)
- collaboration with external partners (networking, clustering, joint ventures, crowd sourcing)
- licencing
- the creation of spin-offs
- venture capital

Some obstacles that inhibit knowledge creation and knowledge transfer include:

- reluctance to share knowledge (for example, for fear of the competition taking over ideas ripe for innovation),
- the risk of ‘free-riders’
- strategic problems related to the identification and efficient absorption of relevant knowledge (e.g., not in line with organisational vision, policy or strategy)

Some caution should be exercised in this regard:

- It is relatively easy to purchase information but this needs to be properly combined with experience, skills etc., in order to generate knowledge.

- Purchasing a license is nothing more than obtaining access to information which is still far from knowledge.
- The mere chaotic (as opposed to strategic) transfer of information within a company could be an impediment to a smooth innovation process.

Attention should be drawn to two enablers of successful OI and successful innovation management – organisational culture (eg., aspects such as behaviour, rituals, how we do things around here) and organisational climate (eg., communication practices and other environmental factors that enable collaboration and the exchange of ideas).

In a paper that provides a systematic review of 29 referred empirical articles on the open innovation process, Durst & Ståhle (2013) address the following questions: *'How does knowledge flow between the organization and its external environment happen, how do organizations change from a closed innovation system to an open one, and when and why do they change? What are the implications for the organizations?'* (2013, p.112).

They describe 'a simple model' of the open innovation process as comprising 'the search for innovation opportunities, the selection of suitable opportunities that organizations want to pursue, the implementation of the projects chosen and the capture of benefits as a consequence of the innovative activities' (2013, p.113).

Durst & Ståhle (2013) provide four reasons why external collaboration is difficult to establish and control, these are:

- The establishment of common and fruitful ambitions and aligned incentives
- Trust (related to information sharing), particularly between remote partners from business and NGOs
- Resources – including financial, knowledge or learning capabilities
- Behaviour (between partners, possibly including coordination, discipline, communication and relationship management)

There are various ways in which resistance could be avoided or overcome, however this goes beyond the scope of this report. In brief, however, Goodman and Dingli (2013) suggest that the following aspects should be considered and strategically implemented to avoid resistance:

- The appointment of a Director of Innovation
- The identification and appointment of idea champions
- The establishment of open communication channels
- The effective dissemination of information [to the right people, internally and externally]
- The establishment of idea connectors and idea scouts
- Staff training and development
- The establishment of effective strategic alliances and university/enterprise collaboration

Following extensive research and an exploration of the relevant literature, the following key criteria were identified and considered to incorporate the relevant issues related to indicators for open innovation in organisations (adapted from Durst & Ståhle, 2013, pp.123-125):

- Relational aspects
- People involved in the process
- Governance
- Facilitators
- Resources

- Strategy
- Leadership
- Climate and culture

In line with the above indicators, Buerkler (2013) provides a list of four key conditions which are necessary for the success of an innovation platform. These are:

- Sufficient common interest in the planned innovations
- Trust amongst the partners involved
- Appropriate resources (human and financial)
- Behaviour and conduct directed towards achieving outstanding results, i.e., innovation (Buerkler, 2013, p. 2)

Incentives play a role in the open innovation process as they may potentially increase motivation related to the generation and sharing of knowledge and ideas. Incentives may involve either intrinsic (eg., recognition or acknowledgement of contribution) or extrinsic (eg., financial) rewards. Incentives may be awarded to either individuals or teams. Buerkler (2013) states:

Incentives in an innovation platform are important and should be streamlined and rationalized, not only for individuals, but also for groups and individual organizations. Incentives guide individuals and institutions when they split or structure their work portfolios. Therefore, expected appreciation, bonuses, and profits from innovation activities are crucial to generate necessary enthusiasm and energy. In order to motivate all partners, incentives must also be fair and based on delivered inputs. (Buerkler, 2013, p.19)

In summary, the following are key issues which require serious consideration:

- A compelling case for the use and application of open innovation processes and practices is essential as it enables people to understand the necessity of OI and often leads to the justification of resources.
- Successful OI requires an inspiring shared view of the future which is not based on past performance, and it required the use of foresight methodologies which enable the creation of scenarios and visions is relevant in this respect.
- The alignment of a strategic OI agenda enables resources and mind-sets to be focussed on the direction the organisation decides to pursue and on the future visions and scenarios that are adopted.
- Top management and key decision makers should demonstrate their commitment to the OI process (which is generally fuzzy and non-linear), mainly since they are the ones who approve the allocation of resources and motivate those involved in the OI process.
- The success of OI often depends on a passionate champion who has the authority to make decisions and to engage others to collaborate and to support those decisions.
- Scoping, environmental scanning and exploration of drivers of change (including the identification of 'weak signals') instigate a culture of innovation.
- Risk taking should be encouraged and 'wild ideas' encouraged, it is better to have a 'wild' idea rather than no idea at all, wild ideas may be tamed or they may act as a springboard for new creative ideas.
- The execution process for implementing the results of the OI process should be well-defined and flexible, in order to nurture, support and modify valuable and feasible ideas.

Successful OI requires an appropriate and feasible strategy and the cultivation of a culture which enables knowledge transfer and the sharing (and flow) of ideas.

Lindegaard (2010) provides a list of elements that need to be put into place before an OI initiative is launched. These include:

- a clear mandate,
- a strategic purpose,
- an ideation theme,
- stakeholder analysis,
- a communication strategy,
- a shared language about innovation within the organization,
- organizational approaches that allow the involvement and commitment of all relevant internal and external actors,
- an attitude that strives for *being* innovative rather than *becoming* innovative.

Methodology for analysis of OI curricula

In order to analyse OI curricula, HE institutions should ensure, in a similar manner to organisations, that the following criteria are established:

- top management and Faculty support,
- a clear business plan with a precise vision,
- effective communication, both inside and external to the department or Faculty,
- a system for monitoring the program
- an evaluation system of performance
- regular review for the purpose of updating the program.

In order to do so, the following recommendations provided by Goodman & Dingli (2013) should be considered as key factors in the design of a program on OI:

- Information and communication should flow, vertically and horizontally
- A specific person or department should be allocated to deal with innovation [or OI]
- Networks or links to outside sources should be created to explore collaboration or outsourcing
- The importance of external sources for idea generation and collaboration, should be fostered, with focus on sustaining customer satisfaction, customer retention [and creating new markets / customers / or sources for new external collaboration]
- Awareness that R & I is relevant in all sections of organisation should be fostered
- All employees regardless of grade should be involved in the innovation process / innovation management [and awareness of scanning environment for new ideas / new sources]
- 'Agility' for collaboration and new product development [also service / business model development / innovation] should be fostered
- There should be fluidity within the organisation to avoid creation of 'silos'
(Goodman & Dingli, 2013, pp.171-72)

Taking into consideration the factors listed in the preceding paragraphs, the following action should be taken into account:

- Develop connections and networks to foster the importance of creating and developing strategic alliances at all levels
 - sectorial and geographical
- Awareness raising

- Communication flows (in and out, vertical and horizontal)
- Integrate stakeholders into programmes
 - To generate motivation and enhance recognition
- Develop methodologies, skills and expertise
 - Relevant to the implementation of the program
- Seed opportunities and innovation to create strategic directions
 - Involving policy makers, prescriptors
 - Create and/or develop public/private cooperations,
 - Establish/reinforce the links between universities and organisations

The proposed methodology to analyse curricula would involve raising the following questions:

- Is the course needs driven?
 - Identified level of students (degree?)
 - Should students and / or trainees be addressed (continuous education)?
- Has the cost been evaluated?
 - Return on investment?
 - Identified (co-) funding?
 - Should it be expected to be profitable?
- Human resources
 - Support of all levels of management?
 - Qualified personnel?
 - Needs for new competencies?
- Strategic alliances
 - Were the needs fulfilled / met?
 - What is the role and what are the actions of the companies involved?
 - What sort of network links should be established (commitment and geographical scope)?
 - Is the identification of and use of external resources required?
 - Should strategic alliances be created with other HEI? / with other industry departments? With consultants, lawyers, banks? With NGOs? With others?
- Communication
 - Where should visibility be registered? (Internet, specialized magazines, etc.)
 - Participation at relevant conferences
 - Quotations? Scope?
- Quality
 - Satisfaction of students/trainees
 - Their employability
 - Will client companies continue to sponsor potential students?
 - Will companies sustain their sponsorship?
 - Patents resulting from training
- Sustainability
 - Profitability?
 - % increase of trainees / students?
 - Number of spin-off companies created
 - Employability of former students
 - Creation of on-site jobs? Full/part time??
 - New applications foreseen?

Conclusion

For OI to be successful, 'communication and other interfaces must become as permeable as possible in order for ideas to flow easily and to be directed towards those who have the authority to take action and for knowledge transfer to be effective' (Goodman & Dingli, 2013, p.197).

This report has provided a discussion on some of the indicators and progress markers related to a methodology for the analysis of OI in University curricula. It provides a list of a number of topics that are relevant to the implementation of OI at University level, some of which could be adapted for in-house training in organisations. Case studies may be included to augment the program. These should include examples of excellence and also failures related to OI practice.

Key issues related to OI have been discussed in this report, which has drawn attention to a number of focus areas to be included in a curriculum that covers OI, a topic that deserves increased attention, particularly at University level. It is expected that the ideas and topics included in this report will be further developed into a robust and feasible methodology for the analysis of an OI curriculum which could easily be adopted by HE Institutions and, possibly, by organisations that wish to increase awareness amongst their key personnel.

In conclusion, it is to be admitted that change has today become more visible and that the OI landscape is in the process of development and adaptation. Therefore, due to the constant presence of change, particularly in the OI landscape, it is strongly recommended that any implemented program should be revised and updated at least every two years in order to keep up to date with the shifting landscape.

REFERENCES

- Buerkler, E. (2013) Critical success factors for joint innovation: Experiences from a New Zealand innovation platform. *The Innovation Journal: The Public Sector Innovation Journal*, 18(2), 2013, article 8. *La Revue de l'innovation : La Revue de l'innovation dans le secteur public*, Volume 18(2), 2013, article 8
- Chesbrough, H. (2003) *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston, MA: Harvard Business School Press
- Durst, S. & Ståhle, P. (2013) Success Factors of Open Innovation: A Literature Review. *International Journal of Business Research and Management (IJBRM)*, Volume (4) : Issue (4) : 2013 pp. 111-131
- Goodman, M. and Dingli, Sandra (2013) *Creativity and Strategic Innovation Management*. Oxford, U.K.: Routledge (Taylor and Francis Group) (Paperback edition ISBN: 978-0415663557, Hardback edition ISBN: 978-0-415-66354-0)
- Lindgaard, S. (2010) *The Open Innovation Revolution*. Hoboken, New Jersey: John Wiley & Sons
- Schumpeter, Joseph. 1943. *Capitalism, Socialism and Democracy*. New York, NY: Harper

APPENDIX 1: LIST OF KEY INDICATORS AND RELEVANCE FOR HE PROGRAMS AT DIFFERENT LEVELS

Indicators	Diploma	Bachelors	Masters	PhD
Leadership	√	√	√	√
Knowledge creation and knowledge transfer		√	√	√
Organisational culture		√	√	√
Organisational climate		√	√	√
Resources	√	√	√	√
External collaboration	√	√	√	√
Staff training and development	√	√	√	√
Relational issues			√	√
People involved in the open innovation process – including Director of Innovation, idea scouts, idea champions, idea connectors			√	√
Strategy - alignment of a strategic OI agenda			√	√
Incentives – intrinsic and extrinsic motivation and rewards	√	√	√	√
Regular monitoring and regular review			√	√
Post program effects (alumni tracking, etc.)				√
Sustainability			√	√

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52 partners from 35 countries



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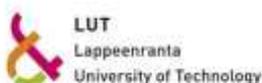
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