MEASURING THE SUCCESS OF SCIENCE PARKS: performance monitoring and evaluation

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Science parks' success

- Need to provide empirical evidence on how they perform (Monck and Peters, 2009)
- No consensus about the definition of successful science parks (SPs)
- To define SPs' success it is necessary to establish a reference framework (Luger and Goldstein 1991)
- SPs may have different goals and objectives and different stakeholders may have different expectations
- Essential to understand and agree on the goals that are most important to each SP and then measure their performance against the agreed goals using a set of performance indicators.

Evaluation of science parks

- SP assessment history started in 1988
- Myriad types of analysis
- No common approach (Link and Siegel 2007, Link and Scott 2007, Squicciarini 2007, Monck and Peters 2009)

- Past evaluations assess:
  - economic performance using the following indicators: companies' employment and growth, survival rate, number of jobs created (Goldstein and Luger, 1991)
  - innovation and technology commercialisation performance using indicators such as: new products launched, new services launched, patent activity, links with universities, etc. (ANGLE 2003, Squicciarini 2008)
  - Unit of analysis focuses on firms or universities (Link and Scott 2003)

An evaluation of success becomes very problematic especially if the assessment exercise is made on a limited number of expectations related to linear model of technology transfer (Phillimore, 1999)

- The majority of these analyses use match sample approach (Monck and Peters, 2009)
- Match sample approach is different from evaluating the park itself in terms of its own goals/objectives

"Researchers have been less interested in the evaluation of science parks, presumably because it is methodologically difficult to identify a counterfactual position, whereas matched pair approach to assessing firm performance is relatively straightforward" (Charles and Uyarra, 2010)

- Regional/national level
- No comparison of performance due to lack of common metrics

Rationale for measuring success

Why is it important to assess the success of science parks?

- Firstly, as science parks are often financially supported by public sector bodies, using science parks as their agents to achieve local objectives, they remain accountable for their activities and their spending must remain transparent. Private sector stakeholders also require a clear indication of the return on their investment.

- The second reason is that science parks must be able to show to the outside world, either directly or via the media, how effective they are. An image of success plays a key role in attracting tenants, talented people to work for the tenants and in building local support and networks.

- Finally, performance assessment is, as in the case of nearly all other profit orientated businesses, essential for managers and stakeholders to review the science park's model and/or objectives and to rectify any shortcomings (Monck and Peters, 2009).

Defining the field for performance measurement

- "Performance measurement: a process of quantifying the efficiency and effectiveness of action"
- "A performance measurement system (PMS): a set of metrics used to quantify both the efficiency and effectiveness of actions" (Neely, 1994)
    - E.g. Performance measures matrix (Keegan et al. 1989), SMART pyramid (Cross and Lynch 1988-1989), framework of results and determinants (Fitzgerald et al. 1991), Macro Process Model of the Organization (Brown 1996), Balanced Scorecard (Kaplan and Norton 1992), Performance Prism (Neely et al. 2002).
- The frameworks are not a complete solution to measuring the performance (Otley 1998)
- Evidence that the existing PMS have been designed for large companies and present limits in implementation within SMEs and specialised organisations (Taticchi, Tonelli, Cagnazzo, 2008)
- Given the specific characteristics and nature of SPs it is essential to design their own PMS that will reflect the requirements of stakeholders and will adequately help measure the multi-dimensional performance of SPs.

Workshop

- IASP European division workshop
- Objective: generate guidance on how SP managers can identify their own success factors and how to measure them via participative workshops and case studies
- Process:
  - to understand what a successful science park mean to different stakeholders
  - to identify success factors for SPs and how to measure them
  - to select key performance indicators to measure progress towards achieving success factors and identify metrics or evidence that can be used to measure each of those performance indicators
- Balanced Scorecard framework was applied to design PMS for SPs
- Four perspectives have been integrated in the balanced scorecard

Commercial perspective

			Performance Indicator	Measures
1	Commercial	1.1	Profitability	Profit Before Interest and Tax - % of budget
		1.2	% occupancy figure	Sq ft occupied /nett lettable sq ft
		1.3	Sales	External enquiries/conversion rate (no per year)
		1.4	Debt management	Total aged debt > 120 days old (previous 12 m average)
		1.5	Financial performance cf budget	Services cost recovery (exclude voids & subsidies)
		1.6	External Funding raised	Number of applications/received funds
		1.7	Investment returns	Internal rate of return (IRR)

			Performance Indicator	Measures		
2	Stakeholder Perspective	2.1	'Tenants satisfaction'	Lease Renewals & Expansions as a % of total expiries		
				Participation in networking events (no. of companies per year)		
				Referrals from tenants or tenant associations		
				Requests from tenants to expand or move/conversions (no per year)		
		2.2	Innovation support	Inter-company trading (no. of companies)		
				Links to knowledge base (no. of companies)		
				Additional business/funding as a result of science park interventions		
		2.3	Companies growth	% of university spin-outs/start-ups (vs. total number of tenants)		
				% of tenant companies growing (jobs)		
				% of tenant companies growing (turnover)		
				% of tenant companies growing (export)		
				% of tenant companies growing (external investment)		
				Survival rates of tenants that have been on the science park		
		2.4	Companies innovation profile	% of graduates on park		
				Number of products/services developed by tenants		
				Number of patents exploited by tenants		
				Number of products licensed in and out		
				% of companies investing in R&D		
				% of tenant companies outsourcing research activities (Open Innovation)		
		2.5	Quality of tenants	Average salary paid at the science park vs. average salary at national/regional level		
				% of tenants fully meeting the entry criteria for science parks		
				% tenants awarded prizes for achievement		
				Number of publications issued by tenants		
				% of employees on the science park having a post graduate degree		
				% inward investement companies		
		2.6	Environement - Carbon Footprint	Reduction in usage of paper		
				Reduction in general waste collections		
				Increase in recycling		
				Reduction in utilities consumption		
				Travel: person miles		
		2.6	Health and safety standards	No of preventable incidents		

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Brand and reputation

			Performance Indicator	Measures		
3	Brand & Reputation	3.1	Media coverage	Pieces of coverage received		
		3.2	Accurate communication of science park purpose	% of annual enquiries from appropriate companies		
		3.3	International Profile	Number of good quality invitations to speak or participate in seminar and requests for studies, benchmarking visits		
		3.4	Size of science park's 'community'	Number of companies in the science park network		
		3.5	Referrals from other organisations	% of enquiries from referrals		
4	Internal Business Processes	4.1	Employee satisfaction	Staff turnover - previous 3 year average		
				Staff sickness absences - days/employee average		
				Number of training sessions - average no/employee		
				No of personal development opportunities - average/employee		
		4.2	Timely communication of accurate information	Number of credit notes issued		
		4.3	Fault log service levels	Fixed within 48 hours		
		4.4	Effective security service	Number of security incidents		
				Response to incidents < 15 min		
		4.5	Reliable IT Systems	Number of ITC outages lasting > 3 hours		

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Why performance measurement system to measure the performance of science parks?

- It enables to assess the science parks against multi-dimensional financial and non-financial objectives/goals (Neely et al. 2002, 2003)
- It is a comprehensive process, implemented vertically and horizontally will ensure consistency of objectives and actions (Bitici et al. 1998)
- It ensures the science park is meeting stakeholders' requirements
- It provides information for monitoring past performance as well as planning future performance
- It motivates people and potentially increase performance
- It ensures the data is collected regularly and will enable benchmarking (Keegan et al. 1989)

"Performance measurement is a topic which is often discussed but rarely defined" Neely et al. (1995).

Thank you

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