

Research Review
Center for Innovation Research

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Report on the research of Center for Innovation Research at Tilburg University

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1. The review committee and the review procedures

Scope of the assessment

The committee was asked to perform an assessment of the research at the Center for Innovation Research (CIR) at Tilburg University. This assessment covers the research in the period 2008-2012 and is the final evaluation of the Center's five year existence. In accordance with the Standard Evaluation Protocol 2009-2015 for Research Assessment in the Netherlands (SEP), the committee's tasks were to assess the quality of the institute and the research program on the basis of the information provided by the institute and through interviews with the management and the research leaders, and to advise how this quality might be improved.

Composition of the committee

The composition of the committee was as follows:

- Professor Aks Zaheer (chair), University of Minnesota Carlson School of Management, US;
- Professor Melissa Schilling, New York University Stern School of Business, US;
- Professor Erkkko Autio, Imperial College London, UK.

A profile of the committee members is included in Appendix A. Dr. Meg Van Bogaert (QANU) was appointed secretary to the committee.

Independence

All members of the committee signed a statement of independence to safeguard that they would assess the quality of Center for Innovation Research and its research program in an unbiased and independent way. Any existing personal or professional relationships between committee members and the program under review were reported and discussed in the committee meeting. The committee concluded that there were no unacceptable relations or dependencies and that there was no specific risk in terms of bias or undue influence.

Data provided to the Committee

The Committee has received detailed documentation consisting of the following parts:

- Self-evaluation report of the unit under review, including all the information required by the Standard Evaluation Protocol (SEP), with appendices;
- Copies of key publications of the research program.

Procedures followed by the Committee

The committee proceeded according to the Standard Evaluation Protocol 2009-2015 (SEP). Prior to the first meeting, all committee members independently formulated a preliminary assessment of the program. The final assessments are based on the documentation provided by CIR, the key publications and the interviews with the management and with the leaders

and researchers of the program. The interviews took place on 10 April 2014 (see the schedule in Appendix 3) in Tilburg.

Preceding the interviews, the committee was briefed by QANU about research assessments according to SEP, and the committee discussed its preliminary findings and decided upon a number of comments and questions. After the interviews the committee discussed the scores and comments. The texts for the committee report were finalized through email exchanges. The final version was presented to CIR, for factual corrections and comments. The comments were discussed in the committee. The final report was printed after formal acceptance.

The committee evaluated the CIR at Tilburg University using the Standard Evaluation Protocol (SEP, see Appendix 2). The SEP requires committee members to qualitatively and quantitatively assess the research quality, productivity, societal relevance and vitality/feasibility of CIR, which is done below. In addition, the committee provides a qualitative assessment of the resources and the next generation (training of PhD students). The committee concludes with a summary of its observations and overall assessment.

2. Research review Center for Innovation Research

Program leaders: Marius Meeus, Niels Noorderhaven, Xavier Martin, Leon Oerlemans

Assessments: Quality: 5
 Productivity: 5
 Relevance: 4
 Viability: 5

The Center for Innovation Research (CIR) at Tilburg University was set up on January 1, 2008 and is a joint venture between the Tilburg School of Economics and Business Administration (TiSEM) and the Tilburg School of Social and Behavioral Sciences (TSB). The purpose of CIR has been to bundle and further strengthen fundamental research in the field of innovation, in particular strategic and organizational issues related to innovation at Tilburg University.

CIR is dedicated to produce world-class fundamental research in the field of innovation strategy and organization of innovation by means of building and energizing the research community within and around Tilburg University, while also engaging with practitioners to contribute to effective innovation management practice.

In addition to funding junior staff members (PhD students and postdocs), CIR provides a platform for joint activities in the field of innovation. CIR organizes invited speeches, conference activities and seminars on topics that are of particular interest to those involved in CIR. Specifically the seminars were referred to by staff as one of the precious activities of CIR. They result not only in knowledge, but provide junior staff with a platform to create a network.

CIR strives to be internationally recognized as an influential and dynamic center of research in the field of innovation strategy and organization of innovation. The overarching themes of CIR are *innovation strategy* and *organization of innovation*, both of which are premised on the *organization's ability to learn*. These three elements and their effect on innovation outcomes define the basic topics for CIR research focus. These three topics coincide with three essential areas of expertise of the two core departments involved: business and corporate strategy, organization analysis, and organizational learning, as related to innovation.

The number of scholars, engaged in CIR over the five years of its existence are provided in Appendix 4. In 2012 a total of 17 scholars and 27 fellows were involved in CIR. The number of faculty members that are actually on CIR payroll is very limited and encompasses only PhD students and postdocs. Fellows involved in CIR are on the payroll of one of the participating schools.

According to the committee CIR has helped bring researchers together from different departments and inspired them to study innovation topics. Several of the committee's discussions with faculty at the center highlighted the role the center had played in bridging the Department of Organization and Strategy, and the Department of Organization Studies. Much fruitful collaboration have emerged from this cross-fertilization. It is also clear that the presence of the center has catalyzed interest in innovation in the departments, which has over

time helped the department to accrue a significant expertise in the area. This expertise yields increasing returns of absorptive capacity: the greater the quantity and sophistication of innovation research being done, the more skilful they become at selecting good research questions, tackling them with rigorous methods, and crafting articles that will have both scholarly and managerial impact.

Quality and productivity

In the Netherlands, CIR claims to have a unique position among similar institutes, due to the combination of its size, profile, and composition. Internationally, CIR closely collaborates with Bocconi University (Milano, Italy) and Copenhagen Business School (Denmark) and has many contacts with other universities worldwide. Furthermore, the Scientific Council consists of prominent scholars from international top institutes.

The self-evaluation report reveals that since 2008 a total of 37 publications were published in top 25% journals and 8 in top 10% journals in the Management field. For Business these numbers are 19 and 7 respectively. Regarding productivity, CIR's primary objective is (and has been) to publish in the target journals especially the very most reputed ones. Occasionally a publication was sought in journals of equivalent caliber in related fields, or in specialized journals with a specific innovation-related focus or issue. The self-evaluation report provides a list with target journals.

According to the committee, the quality and quantity of the research articles produced by the faculty, postdocs, and doctoral students of the Center for Innovation Research is exemplary. They have produced original research in innovation that has been published in the field's most prestigious journals, such as *Management Science*, *Academy of Management Journal*, *Strategic Management Journal*, *Organization Science*, and *Research Policy*. It has also produced several notable books, as well as other publications. This work has explored central issues in innovation such as technology sourcing, the effect of vertical integration, patterns of collaboration, methods of knowledge transfer and sharing, and more.

The research community has recognized the quality of the work associated with the center through numerous awarded prizes, and through citing it in subsequent work. For example, Google Scholar indicates that the five articles highlighted in the self-evaluation report as central to the center's mission have, as of April, 2013, collectively been cited in at least 477 other works, despite the fact that these publications are fairly recent. The self-evaluation report also indicates that the center's number of publications, citations, and citations per fellow is very competitive with its main competitors (ECIS, Imperial, Mack, Kite, and CIRCLE). This provides strong evidence of the quality and scholarly impact of CIR's research output.

As highlighted in the self-evaluation report, scientific staff members associated with the center produced 178 published journal articles in innovation between 2008 and 2012 (37 in CIR target journals). Notably, scholars have continued to publish since the self-evaluation report was produced, and these numbers would be higher if the committee were able to include publications from 2013. Scholars also have produced numerous other kinds of research and practice output, including books, book chapters, and conference presentations and invited talks. It is noteworthy that some of the center's most junior scholars, as well as recently hired assistant professors by one of the participating departments, published works in the field's very top journals. These journals are very selective, and it is extremely difficult for junior scholars to publish work in these journals early in their career. Doing so helps to

set them on a trajectory that will meet or exceed that of their top peers, greatly increasing the likelihood they will achieve tenure. This is strong evidence of how the center helps to improve the productivity and quality of the scholarship of its associated members.

Overall, the committee concluded that the research quality and productivity of Tilburg University's CIR has been very impressive. Moreover, it appears quite clear that the center has played a pivotal role in helping to increase both the quality and quantity of work on innovation at the university; specifically, by becoming a focal point for innovation research.

Further, by bringing in noted scholars for seminars, it has helped disseminate knowledge about state-of-the-art research while simultaneously providing high benchmarks that encourage the young scholars of the center to set high aspirational targets for themselves. Several of the committee's conversations with faculty, particularly the groups of younger scholars, noted the importance they placed on the seminar series. It both exposes them to high quality research, and enables them to develop relationships with top researchers in the field. Both processes help the CIR's researchers become more effective and better-known scholars.

Societal relevance

CIR has been engaged in a number of efforts to engage in societal relevance. In CIR research application to practice is a relevant consideration. A number of external PhD students are supervised by CIR fellows. Furthermore, CIR aimed at being visible in professional and popular media as far as it was consistent with its mission and vision. Interviews and articles were published in Dutch business/financial and daily press. A number of CIR fellows have acted in advisory functions at various scientific and public organizations.

In 2011, in collaboration with the TiasNimbas Business School, CIR organized a workshop with the theme Business Models for R&D and Innovation. Other examples of outreach activities are provided in the self-evaluation report.

The committee concluded that the societal relevance of CIR is already impressive and evolving consistent with its mission. The CIR started out with an explicit focus on fundamental research, and it takes time for insights from basic research to feed through to insight for practice. That said, CIR has already developed an impressive contact network among industry practitioners that it leverages for research (e.g., in the shipbuilding sector) and to which it feeds back its research in return. There were numerous instances and examples cited of industry involvement, and these will no doubt continue to increase, should CIR continue its mission.

An important aspect of CIR's evolving mission is increased focus on societal innovation, or innovation with a societal impact. This focus has been proposed for CIR in its future incarnation, should funding continue. The committee thinks this is a valuable and worthwhile focus, and comments on this aspect are elaborated below.

Given that CIR started as an impressively lean organization – which is something the committee appreciated – the question nevertheless poses itself as to whether the same degree of leanness can be maintained, as emphasis on societal impact delivery continues to increase. Therefore it is recommended that CIR considers ways to extend its outreach mission while retaining core focus on fundamental research. One strategy for achieving this could be to explore ways to organize income-generating outreach activities that practitioners can adopt.

Strategy for the future

As noted before, the evolving agenda of CIR appears to point towards an increasingly explicit focus on social innovation. As such, the committee finds that CIR has achieved exceptional success in creating and leveraging synergies achieved through the combination of researchers from two different university departments. Evidence of synergies achieved through such cross-breeding was manifest throughout the evaluation interviews. Internally, thus, CIR has operated as a bridging mechanism that has both strengthened the profile of innovation research at CIR and created an internationally visible and relevant centre of gravity in this domain, one that has attracted top-class research talent to Tilburg.

The CIR organizational model appears to offer a feasible platform for evolving and extending CIR's research mission in the future, as its research agenda broadens to address social innovation themes. The committee sees that CIR's already proven synergy-creating and leveraging organizational model could be extended to connect further research departments into the social innovation agenda, such as law, psychology, and sociology, for example. It seems clear that CIR has established effective organizational practices and processes for nurturing synergies in cross-disciplinary research. A research agenda addressing the broad theme of social innovation is inherently multidisciplinary. Thus, the organizational platform developed by CIR should offer a promising framework in which to execute the social innovation research agenda.

It should be noted that extending CIR's agenda towards broader social innovation will likely challenge the lean organizational model employed thus far. This is because effecting social innovation is a complex process that involves coordination among numerous stakeholders. Therefore, to continue to effectively deliver on its outreach and societal impact agenda, it seems likely that much more multi-stakeholder coordination will be required than has been the case thus far. Although CIR has evolved a strong outreach activity that feeds back insight from CIR research to industry practice, executing a similar agenda in the area of social innovation may well require a more munificently resourced support organization than has been the case thus far.

PhD-training and supervision

CIR's central focus over the five-year period of its existence has arguably, and appropriately, been on the creation, development, support and maintenance of a large and very high-quality PhD program. The center has supported, in its very short period of existence, 15 PhD students, of which six have graduated (several of which have obtained excellent placements), and another seven more are expected to graduate in the next two years. This was accomplished despite the limited number of faculty available to supervise doctoral students, and some difficulty in recruiting top doctoral students in some years, a global problem. PhD students have been supported through CIR funding, and have been also affiliated with one of the two Tilburg University schools – TISEM and TSB – that have been the intellectual and (partly) financial sponsors of CIR. The use of CIR funds to primarily support and maintain the PhD program through guaranteed funding to the students has been a particularly notable and creditable feature of the CIR's efficient and effective use of its resources.

The PhD program has emphatically delivered on its mission to support and generate high-quality research. The students of the CIR PhD program have collaborated extensively with CIR Fellows to perform research of the highest caliber. For example, Prof. Xavier Martin and his doctoral student Ilya Cuypers recently received two prestigious international awards for

their joint work. PhD students have also been actively supporting another of the key missions of CIR, the dissemination and valorization of knowledge, both by getting involved in contract research projects as well as through direct engagement of the business community by means of talks at companies. CIR has also developed and delivered Research Master's courses, including by drawing on faculty from its partner schools such as Bocconi through video-conferencing.

Another notable feature of the imaginative use of resources by CIR to enhance the exposure of PhD students to top international scholars has been a formal process in which all visiting seminar speakers were also asked to conduct a PhD workshop on their visit, as well as provide feedback on on-going PhD projects sponsored by CIR. By providing students and faculty with adequate funding to carry out excellent research, putting in place the right incentives and reward structures to encourage the conduct of innovation-related research, and overall, by incubating a highly conducive environment for conducting high quality research, CIR has successfully created a locus for the superb training and scholarly development of a significant number of PhD students over the course of its first five years.

General conclusion

In sum, the committee believes that CIR has been an unusually effective and successful initiative, operating not just at top European standards, but at world class standards. By enhancing the visibility of innovation research at Tilburg, CIR has significantly helped to attract and retain top innovation researchers. Our conversations with CIR faculty were very clear in this respect: the presence and activity of the center was an important element in their decision to join and stay at Tilburg. The center has a remarkable number of star researchers – many of whom have over 3000 Google Scholar cites on their own. It also has young faculty that have gotten to very impressive early starts, and has attracted exceptional doctoral students that have produced top tier publications prior to graduation – another very impressive feat.

A major factor underlying CIR's success is the research environment it has created. In particular, the careful inclusion and support of a number of elements of that environment have been both additive and integrative, and have complemented one another to create an abundance high quality research and excellent doctoral students. These elements include seminars, international visiting scholars, the hosting of major conferences, travel resources, and PhD funding as well as a Scientific Council made up of some of the world's most prominent innovation scholars. There is a deep coherence and consistency to this set of actions which has paid off handsomely, making CIR unique among research centers the world over. The efficiency and leanness of CIR has been a notable and highly commendable feature.

An important goal of CIR has been 'valorization,' or the conversion, translation and dissemination of research findings into value for industry in the Netherlands and elsewhere. In this regard, CIR has, in our opinion, made huge efforts by creating an industry council to guide their initiatives, by taking on contract research, and by having PhD students work on contract research and connect with managers from industry. It should be noted that valorization implies some trade-offs with the primary mission of CIR, which is to encourage top, international quality, research. However, despite the trade-offs, CIR has taken significant strides toward such valorization, and may consider other creative ways to promote this goal, including the creation of an outreach agenda with stakeholders and policy-makers.

The leanness and efficiency of CIR has been another particularly noteworthy and creditable aspect of CIR. In a world of perennial resource constraints, the manner in which CIR has carefully deployed its resources toward the highest priority initiatives (viz. the PhD program) has been a major element underlying its success. CIR has clearly managed to utilize its scarce resources to substantially increase visibility and create and strengthen international scholarly networks, and empowered individuals associated with the center in the process.

From a broader perspective, CIR has created a platform and a solid foundation for these two schools at Tilburg University that do complementary work. The creation of this common forum has both elevated the visibility of the center and the key role of innovation at level of university and beyond, and is entirely consistent with stated goals and priorities at the university, region and national levels. Looking forward, CIR already was a catalyst for innovation research and can continue if they keep extending the agenda towards social innovation. CIR should continue to act as a catalyst and strive to more deliberately include even more disciplines under its umbrella. In keeping with the overarching goal of addressing large societal challenges, CIR would be well placed to begin more formally directing resources and attention toward social innovation, which would help cement its thought and leadership position in the larger innovation space regionally, nationally and internationally.

Appendices

Appendix 1: Curricula vitae of the committee members

Professor Aks Zaheer (chair) holds the Curtis L. Carlson Chair in Strategic Management. He received his PhD in strategic management from the Massachusetts Institute of Technology and his Master's in Business from the Indian Institute of Management in Ahmedabad. His current research is in strategic decision making in uncertain business environments, the antecedents and consequences of trust in organizations and in interfirm exchange, strategic alliances, mergers and acquisitions, and the dynamics of social structure in organizations, among others. He has published in many journals, including *Administrative Science Quarterly*, *Organization Science*, *Strategic Management Journal*, *Academy of Management Review*, and *Academy of Management Journal*. He was named the Outstanding Core Teacher of the Year for the Full-Time MBA Program in 2005, 2009, 2010, and 2011; and received the Curtis Cup Outstanding Teacher Award in 2006 for Executive MBA teaching, Excellence in Teaching Awards for 2004, 2009 and 2012, MBA Teacher of the Year in 1995, commended for teaching excellence in Business Week's guide to the 50 Top Business Schools in 1997 and named one of the *World's 50 Best B-School Professors* by *Poets and Quants* in 2012.

Professor Erkkö Autio is Chair in Technology Venturing and Entrepreneurship and Director of the Doctoral Program at Imperial College London Business School. At the Innovation and Entrepreneurship Group, he directs the Diffusion of Innovation theme and is Co-Investigator in the Digital City Exchange project and in the UK Enterprise Research Centre. He is also a member of the Senate of Imperial College and serves in the Research Committee of ICBS. Following his Doctorate at Helsinki University of Technology (HUT), he held a number of academic roles, including professor and director of the Institute of Strategy and International Business at HUT in 1999, Visiting Professor at CERN in 2001 and Professor at HEC Université de Lausanne in 2003, before taking up his current position at ICBS in 2006. Autio has been a founder, non-executive director and advisory board member of a number of technology-based ventures and venture funds, and he has worked widely with industry and government in Europe and Asia. He has advised the European Commissioner for Innovation and Entrepreneurship, and he chaired the Europe Innova Expert Panel on 'Gazelle' Policy from 2006 to 2008.

Professor Melissa Schilling is a professor of management and organizations at New York University Stern School of Business. She received her Bachelor of Science in business administration from the University of Colorado at Boulder. She received her Doctor of Philosophy in strategic management from the University of Washington. Before joining NYU, Schilling was an Assistant Professor at Boston University (1997-2001), and has also served as a Visiting Professor at INSEAD, and the Bren School of Environmental Science & Management at the University of California at Santa Barbara. Professor Schilling is widely recognized as an expert on innovation and strategy in high technology industries. She is an appointed member of the National Academy of Sciences Committee on Overcoming Barriers to Electric Vehicle Deployment, and she also serves on the review panel for the European Research Council. Her textbook, *Strategic Management of Technological Innovation* (now in its fourth edition), is the number one innovation strategy text in the world, and is available in seven languages. Her research in innovation and strategy has earned her awards such as the National Science Foundation's CAREER Award, and the Best Paper in Management Science and Organization Science for 2007 Award.

Appendix 2: Explanation of the SEP scores

Excellent (5)	Research is world leading. Researchers are working at the forefront of their field internationally and their research has an important and substantial impact in the field.
Very Good (4)	Research is nationally leading. Research is internationally competitive and makes a significant contribution to the field.
Good (3)	Research is internationally visible. Work is competitive at the national level and makes a valuable contribution in the international field.
Satisfactory (2)	Research is nationally visible. Work adds to our understanding and is solid, but not exciting.
Unsatisfactory (1)	Work is neither solid nor exciting, flawed in the scientific and/or technical approach, repetitions of other work, etc.

Quality is to be seen as a measure of excellence and excitement. It refers to the eminence of a group's research activities, its abilities to perform at the highest level and its achievements in the international scientific community. It rests on the proficiency and rigor of research concepts and conduct; it shows in the success of the group at the forefront of scientific development.

Productivity refers to the total output of the group; that is, the variegated ways in which results of research and knowledge development are publicized. The output needs to be reviewed in relation to the input in terms of human resources.

Societal relevance covers the social, economic and cultural relevance of the research. Aspects are: societal quality of the work. Efforts to interact in a productive way with stakeholders in society who are interested in input from scientific research, and contributions to important issues and debates in society.

societal impact of the work. Research affects specific stakeholders or procedures in society.
valorization of the work. Activities aimed at making research results available and suitable for application in products, processes and services. This includes interaction with public and private organizations, as well as commercial or non-profit use of research results and expertise.

Vitality and feasibility. This dual criterion regards the institute's ability to react adequately to important changes in the environment. It refers to both internal (personnel, research themes) and external (developments in the field, in society) dynamics of the group. On the one hand, this criterion measures the flexibility of a group, which appears in its ability to close research lines that have no future and to initiate new venture projects. On the other hand, it measures the capacity of the management to run projects in a professional way. Policy decisions and project management are assessed, including cost-benefit analysis.

Appendix 3: Program of the site visit

Thursday 10 April 2014

8.00 – 9.00	Preparatory meeting with the secretary of the Committee
9.00 – 10.00	Meeting with CIT Management Team:
10.00 – 11.00	Meeting with junior CIR fellows:
11.00 – 12.00	Meeting with the Deans of the Schools:
12.00 – 13.30	Lunch
13.30 – 14.30	Meeting with senior CIR fellows:
14.30 – 15.30	Meeting with CIR PhD students:
15.30 – 17.00	Reflection by the Committee with the assistance of the Secretary
17.00 – 18.00	Wrap-up meeting with CIR Management Team:

Appendix 4: Quantitative data

Total number of CIR postdocs, PhD students and other paid personnel

Faculty	2012	2011	2010	2009	2008
<i>Total number</i>	17	16	13	9	4
<i>Of whom:</i>					
- Postdocs	2	3	3	2	0
- PhD students	13	12	9	6	4
- Operations Manager	1	1	1	1	0

Total number of CIR fellows

Fellows	2012	2011	2010	2009	2008
<i>Total number</i>	27	28	28	25	17
<i>Of whom:</i>					
<i>Senior</i>	15	15	14	13	11
<i>Junior</i>	12	13	14	12	6

Publications in CIR target journals

				<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>Total</i>
TOTAL IN CIR TARGET JOURNALS				3	9	10	5	10	37

Overview of CIR research output over the 5 years of its existence

	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>
<i>Journal publications, including</i>	21	30	42	40	45
General management journals	1	6	7	3	7
Innovation journals	5	7	10	3	4
Other journals	15	17	25	34	34
TOTAL IN CIR TARGET JOURNALS*	3	9	10	5	10
<i>Book publications, including</i>	28	20	7	12	10
Monographs	1	1	1	0	1
Edited books	2	2	2	1	0
Book chapters	25	17	4	11	9

*CIR target journals include: AMR, AMJ, SMJ, JoM, ASQ, JIBS, OrgSci, JMS, RP, MS, OS, JPIM