Managerial Takeaways
What We Learned From the Academic Sessions at WOIC 2018

Prof. Solomon DARWIN
Prof. Henry CHESBROUGH
Sea Matilda BEZ, Ph.D.

Acknowledgement to Drew Washington for her important contributions

WOIC 2018 has this unique setting of bringing academics and practitioners together to discuss industry hot topics. These topics not only stimulate academic research, but also have managerial implications. Below the sum up of some of presentations you might have missed during this year’s conference.

Please feel free to contact the researchers if you want to dig deeper in to their findings.

Table of contents

Digital Transformation ........................................................................................................................................ 3
   The Impact of Openness on Entrepreneurship in Times of Digital Transoformation .................................. 3
3D Printing ..................................................................................................................................................... 4
   Innovation for the Rest of Us: The Impact of 3D Printing on Entrepreneurship ........................................ 4
Fab Labs ...................................................................................................................................................... 5
   Open Social Innovation Dynamics and Impact: Exploratory Study of a Fab Lab Network ....................... 5
User Communities ......................................................................................................................................... 6
   Two types of openness to leverage user communities in the video game: community sensing & product ..... 6
Ecosystems .................................................................................................................................................... 7
   Recipes for success: conditions for knowledge transfer across open innovation ecosystems ............... 7
   Effective brokers – Getting the Most from Your Innovation Outpost ...................................................... 8
   Ecosystem development through value creation and value capture processes ..................................... 9
   What Role Does Openness Play in The Value Creation Process? Emergent technologies .................. 10
Artificial Intelligence .................................................................................................................................... 11
Knowledge Transfer .................................................................................................................................... 11
   Finding your peers - towards the comparison of European knowledge transfer organisations ........... 12

“For success you need to be connected to external knowledge. Researchers are an overlooked resource who are willing to help”
Professor Solomon Darwin
The Impact of Openness on Entrepreneurship in Times of Digital Transformation – Empirical Evidence from Micro-Enterprises in Rural India

Managerial Summary

In our quantitative study we investigate how openness and the adoption of digital technologies can contribute to entrepreneurship in rural India. Entrepreneurship is often considered a key means to tackle the ongoing challenge of poverty among the rural Indian population; hence, studying the antecedents of entrepreneurship in rural India is not only important for a better theoretical understanding of the context-dependence of openness, but also results in important insights for policy makers. We test our hypotheses based on more than 1,000 survey responses from entrepreneurs of Indian micro-enterprises in various sectors and find support for some, but not all, of our hypotheses: We found marginally significant results indicating that openness leads to increased levels of entrepreneurship and strong support for our hypotheses that family support, community support, and government support lead to increased levels of entrepreneurship. Further, we found that the latter three relationships are strengthened when entrepreneurs adopt digital technologies. Our results indicate that in rural India, the canonical approach of openness is still important; due to the specific socio-cultural background, however, the entrepreneur’s interaction with both family and local communities is of even greater importance.

Keywords: entrepreneurship; openness; digital transformation; family support; community support.

Takeaways

1. Open innovation is a context-dependent principle
2. In emerging markets such as India, the family and community play an even bigger role
3. Digital technologies can act as a leverage to foster entrepreneurship

Information about the authors

Jonas Soluk – jonas.soluk@whu.edu: PhD candidate at WHU – Otto Beisheim School of Management. Research interests: Digital transformation, innovation, corporate venturing.

Nadine Kammerlander – nadine.kammerlander@whu.edu: Chaired Professor of Family Business and Speaker of the Entrepreneurship & Innovation Group at WHU.

Solomon Darwin – sdarwin@berkeley.edu: Executive Director at the Garwood Center for Corporate Innovation, Haas School of Business, University of California, Berkeley.
Innovation for the Rest of Us: The Impact of 3D Printing on Entrepreneurship

Managerial Summary

It has been now more than five years since Forbes and Wired called 3D printing a transformation technology. In some industries, the ‘revolution’ has already begun. An increasing number of large manufacturing companies have adopted 3D printing, not just for prototyping, as it used to be the case in the past, but also to manufacture directly end-use parts and products. Airbus, Ford, General Electric are just a few of many companies that make a significant use of 3D printing technologies. Yet, the question remains as to what the particular benefits of using 3D printing technologies for SMEs and startups are and, more specifically, what the impact of this new set of technologies on entrepreneurship is. In order to answer this question, authors identify five categories of the most common issues faced by entrepreneurs: new product development issues, technical issues, market issues, financial issues and business model issues. They then show how 3D printing can help mitigate these issues at all stages of the production process (development, manufacturing and distribution).

Keywords: 3D printing, entrepreneurship, new product development, distributed manufacturing

Takeaways

1. The extent of benefits of 3D printing for entrepreneurs depends strongly on the type of use (Rapid Prototyping, Rapid Tooling, Direct Manufacturing, Local/home fabrication)
2. Direct manufacturing and Home fabrication are key drivers of Distributed Manufacturing
3. Direct Manufacturing gives rise to a positive cash-flow entrepreneurial model

Information about the authors

Thierry Rayna – thierry.rayna@polytechnique.edu: Professor of Innovation Management at Ecole Polytechnique (France). Thierry’s research investigates the consequences of technological change and digitisation on strategies, business models and innovation ecosystems. He has served as an advisor for national and international organisations, as well as for major companies in the media, telecommunications, cultural industries, and in the 3D printing/Additive Manufacturing industry. He also mentors start-ups.

Ludmila Striukova – ludmila.striukova@skema.edu: Associate Dean of Innovation Academy at SKEMA Business School (France). Ludmila’s research focuses on disruptive technologies (3D printing, Internet of Things, blockchain), big data, business model innovation and intellectual property management. Ludmila has been regularly invited to give talks at industry events and has been a mentor of several start-ups.
Open Social Innovation Dynamics and Impact: Exploratory Study of a Fab Lab Network

Managerial Summary

In the recent years, private benefits of open innovation have been widely discussed, whereas the topic of social benefits that open innovation can bring has not received as much attention. One of the reasons is that open social innovation is more difficult to study, as usually it is more diffused, can take many different forms and can happen in very different contexts. Our study therefore focuses on an observable and comparable sample of 170 fab labs and makerspaces launched in Russia as a part of social innovation funding program.

One of our main aims was to investigate, within the context of these fab labs and makerspaces, the dynamics of open social innovation and how it delivers social impact. Our findings showed three different types of these fablabs: Educational (located at universities/schools), Industry (located in incubators or techno parks), Residential (located in residential neighborhoods) were identified in this study, each facing different kinds of constraints and requiring different business models. Yet, despite some key differences between each type of these fablabs, this research has shown that many aspects of the social innovation process are nonetheless similar across the three types.

Keywords: Open innovation, social innovation, fablabs, makerspaces, social impact

Takeaways

1. Non-subsidised fab labs and makerspaces can have sustainable income
2. Fablab’s successful business model will primarily depend on its location
3. ‘Lightweight’ bottom-up and open social innovation process enables to rapidly deliver social impact.

Information about the authors

Thierry Rayna – thierry.rayna@polytechnique.edu: Professor of Innovation Management at Ecole Polytechnique (France). Thierry’s research investigates the consequences of technological change and digitisation on strategies, business models and innovation ecosystems. He has served as an advisor for national and international organisations, as well as for major companies in the media, telecommunications, cultural industries, and in the 3D printing/Additive Manufacturing industry. He also mentors start-ups.

Ludmila Striukova – ludmila.striukova@skema.edu: Associate Dean of Innovation Academy at SKEMA Business School (France). Ludmila’s research focuses on disruptive technologies (3D printing, Internet of Things, blockchain), big data, business model innovation and intellectual property management. Ludmila has been regularly invited to give talks at industry events and has been a mentor of several start-ups.
Two types of openness to leverage user communities in the video game industry: community sensing & product openness

Managerial Summary

Video game developing firms have been suggested to be able to simultaneously utilize user communities for information about users’ needs, demand and preferences and as a source of external innovation. Quantitative evidence on these outcomes is scarce however. In this study, two types of openness in product development projects are examined that aim to leverage user communities for product innovation. (1) The concept of a community sensing capability is used to capture processes that facilitate inbound flows of user-need information through a close proximity to user communities. (2) Product openness is proposed as a concept capturing the extent products are designed with degrees of openness that allow them to function as platforms for external innovation. To empirically test effects of these on the efficiency and effectiveness of digital product development, data from 151 product development projects in the Swedish video game industry are used to test a model that links community sensing, product openness, development speed and financial performance in product development projects. Results indicate that product openness is more beneficial to drive development speed and financial performance, positively affecting the former directly and the latter indirectly. Community sensing in turn drive openness in products, but do not have significant effects on speed or performance.

Keywords: Open innovation; video game industry; user innovation, user community

Takeaways

1. Opening digital product innovation processes to information from user communities tend to increase the openness of products to user innovation.
2. Digital products’ openness to user innovation tend to increase the speed of product development processes.
3. Degrees of openness in products are positive for the speed of development and indirectly the performance of products, but to create partially open products, information from user communities is important.

Information about the author:

Peter Ek - peter.ek@fek.uu.se: PhD candidate in Business Studies at the Department of Business Studies, Uppsala University, Sweden. His research interests focuses on open and user innovation, and in particular in the contexts of product and digital innovation.
Recipes for success: conditions for knowledge transfer across open innovation ecosystems

Managerial Summary

Open innovation ecosystems involve the transfer of knowledge between multiple parties to achieve novel innovations; to an extent, they have superseded network-level approaches to co-creation. Limited research ascertains the conditions required for knowledge transfer success, particularly in the context of collaboration with diverse organisational actors. Constituents of successful knowledge exchange between ecosystem partners therefore require further clarity. This paper investigates the conditions for knowledge transfer success between organisations interacting within open innovation ecosystems. Through interviewing ecosystem members, perceptions of seven identified conditions pertaining to firm, knowledge or relationship related characteristics were explored. These conditions were amalgamated into causal recipes, displaying the need for their presence or absence within an ecosystem partnership. Results indicate that combinations of knowledge, relationship and organisational characteristics contribute to knowledge transfer success. However, these combinations are dependent on the type of ecosystem partnership.

Keywords: open innovation; ecosystem; knowledge transfer

Takeaways
1. Knowledge transfer success is dependent on the presence of specific conditions within an innovation ecosystem
2. No single condition is responsible for successful transfer; combinations of conditions are of greater significance
3. Different ecosystem partnerships require the presence of certain conditions for knowledge transfer success

Information about the authors

Emily Bacon – 950171@swansea.ac.uk
Emily Bacon is a PhD Student in the School of Management, Swansea University. She received her undergraduate degree in Education & Psychology at Cardiff University. Her research interests include knowledge transfer, coopetition, and open innovation, particularly network and ecosystem-level approaches.

Michael Williams – m.d.williams@swansea.ac.uk
Michael D. Williams is a Professor (Personal Chair) in the School of Management, Swansea University. With an academic and professional background in computer science, his current research interests focus on primarily upon domains and analytics, applying a range of analytical tools and techniques to the analysis of data in order to develop greater understanding of the behaviour of consumers, employees, citizens, markets, and organizations. Prior to entering academia, he worked in both public and private sectors in domains including finance, telecommunications, manufacturing, and government with firms including British Telecom, Standard Chartered, and Canon.
Effective brokers – Getting the Most from Your Innovation Outpost

Managerial Summary

As the Digital Era evolves to offer a whole new generation of technologies and business models, more companies are finding it essential to be connected to the innovation ecosystems where these disruptions and new opportunities are emerging. Therefore, more and more companies are making the investment to set up dedicated, full-time innovation outposts in these regions. However, joining these innovation ecosystems and successfully bringing back knowledge, business opportunities, partners, or potential projects to the company, and ensuring these can be put to use is far from straightforward. Based on more than 15 years of researching, working for, and advising companies with innovation outposts, we have developed a typology of innovation outposts as well as ways to successfully organize these units. We suggest that the successful outposts are the ones that are embedded externally in the ecosystem as well as internally in their organizations. In this paper, we depict different ways through which innovation outposts can become externally and internally embedded to help their organizations innovate in important ways.

**Keywords:** Innovation outposts; Innovation ecosystems; Global innovation; Open innovation.

<table>
<thead>
<tr>
<th>Takeaway 1</th>
<th>Takeaway 2</th>
<th>Takeaway 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Four types of innovation outposts:</strong></td>
<td>Loners can only survive for a short period of time while the VIP Sightseers and the Connected Castaways are often a temporary solution before managers have enough social capital to make their outposts evolve into Effective Brokers.</td>
<td>Successful outposts typically became Effective Brokers because they had top management commitment since the beginning, an adaptive purpose (clear guiding principles but flexible enough to adjust to emerging conditions), and supportive architecture (many times, dual embeddedness is achieved at the team level by combining well-connected locals and senior managers from headquarters).</td>
</tr>
</tbody>
</table>
| Internal Embeddedness | VIP Sightseers | Effective Brokers | Low
| High | Low | Connected Castaways |
| Low | High | External Embeddedness |

Benoit Decreton – benoit.decreton@wu.ac.at: PhD Candidate at WU Vienna, Visiting Scholar at Stanford in 2018; Researches global strategy, innovation, headquarters-subsidiary relations, KM.

Jean-Marc Frangos – jeanmarc.frangos@bt.com: Director of External Innovation at BT; Responsible for innovation partnerships with start-ups, VCs, and industry peers around the globe.

Lisa Friedman – friedman@enterprisedevelop.com: Co-founder and Partner at EDG; Advises companies globally on innovation strategy, practices and tools as well as organizational design.

Felipe Monteiro – felipe.monteiro@insead.edu: Strategy Professor at INSEAD; Researches global knowledge management, global technology scouting, emerging markets.
**Ecosystems**

**Ecosystem development through value creation and value capture processes**

**Managerial Summary**

The past decade has witnessed a shift from a closed to an open innovation model, where firms complement their own resources with external resources and competencies. So far we know that small and medium-sized enterprises (SMEs) use open innovation practices different than large firms, but a little is known how could they benefit from open innovation environments in a regional ecosystem. Therefore, I explore the ways how interorganizational collaboration among SMEs and other ecosystem stakeholders could contribute to ecosystem development. The empirical work is based on a qualitative study combining seven years of data collection and observations conducted in a Danish regional ecosystem. The research builds on prior findings on embracing open innovation in SMEs, ecosystems, and business model research. The main findings outline key insights into the important elements that contribute to the process of value generation and appropriation at three levels of analysis: the ecosystem, interorganizational, and organizational level. On the practical side, this research helps to understand the drivers of interorganizational collaboration by providing practical recommendations for managers of both large and small firms that intend to establish mutually beneficial activities within their ecosystems.

*Keywords*: Regional innovation ecosystem; open innovation; SMEs; interorganizational collaboration, business models.

**Takeaways**

1. Sustainable financing is important for any new product development process. However, for interorganizational collaboration where small firms are involved its level and payment/reimbursement methods are extremely important. Financial issues considered minor and unnoticeable for large firms may cause a complete initiative withdrawal for small firms. See section 4.1 (Findings) on Ecosystem level.
2. Power balance could be a big issue in the interorganizational collaboration between small and large firms. In order to mitigate it on the ecosystem level companies may invite an external facilitator, which will manage the interorganizational activities as well as realize the benefits of the shared cognitive frame on inter-organizational level. See section 4.1 (Findings) on Ecosystem level & section 4.2 (Findings) on Interorganizational level.
3. Make sure that all organizations in the activity are part of the same project through proper expectations management; long term gain potential (and especially important for small firms) a balance between their operational activities and joint initiatives. See section 4.3 (Findings) on Organizational level.

**Information about the author**

**Agnieszka Radziwon – agra@btech.au.dk**: Assistant Professor of Innovation at Aarhus University in Denmark [www.linkedin.com/in/agnieszka-radziwon-73a8304/](http://www.linkedin.com/in/agnieszka-radziwon-73a8304/), [https://twitter.com/agradziwon](https://twitter.com/agradziwon). Interested in open innovation, inter-organizational collaboration, ecosystem development, business models, open science.
Ecosystems

What Role Does Openness Play in The Value Creation Process? Innovation Development vs Commercialisation of emergent technologies

Managerial Summary

This research asks the question: what are the dynamics of openness along the innovation process? By answering this question we aim to support managers to understand a) which value creation strategies could be adopted by companies along a product/service's innovation process b) and the circumstances when to adopt a more open or a more closed ecosystem. To understand the dynamics of openness along the innovation process we started from two basic assumptions: 1) the innovation process is formed by two main constitutive parts: innovation R&D and innovation commercialisation; 2) there are two different types of ecosystems a Research (RE) and a Commercialisation one (CE). Companies can adopt different value creation strategies depending to the innovation process stage in which they are in. We have observed the value creation dynamics of the efforts of 25 firms in the R&D and commercialisation of an emerging technology (3D printing) in an established sector (food) and in an emerging one (bioprinting). The analysis overall reviewed: 1) the ecosystem configurations for different types of product or service offering; 2) the ecosystem dynamics (i.e. sequences) of openness/closeness at different stages of the innovation R&D and commercialisation; 3) the changes in the ecosystem structures depending if the 3D printing-related offering is the company’s core business or not.

Keywords: Value Creation; Ecosystem Management; OI Management; Innovation Dynamics Strategies; Innovation Process

Takeaways

1. There are 3 types of ecosystem configurations of adoption according to the different types of product or service offered: 1) companies that create value by starting to develop a Research Ecosystem (RE) & over the time move toward a Commercialisation Ecosystem (CE); 2) Companies that create value directly by building a CE & keep that one over the time; 3) companies that only create value by adopting a RE.

2. Companies tend to present different ecosystem dynamics (i.e. sequences) of openness according to the type of product/service offered to the market. For instance, who produces appliances usually starts by creating value adopting open strategy in the RE then followed by a closed strategy in the CE.

3. There are changes in the ecosystem structures that depends if the 3D printing-related ecosystem is the company’s core business or is a subsidiary one. For instance, companies creating value by providing 3D printing components (e.g. printing heads), have another core business and the 3D printing-related one is a subsidiary. Therefore they start directly to create value by building a CE.

Dr Serena Flammini – sf559@cam.ac.uk: is a Researcher at the University of Cambridge, specialised in driving new products to market. Her research focuses on strategies development and the management of emerging technologies (e.g. digital manufacturing technologies), open innovation and business model innovation issues related to these topics. She owns a Ph.D. in Technology and Innovation management, with a thesis on emerging technologies and their influence on business model dynamics, where she focused on 3D Printing applications in the Food Industry. During the PhD, Serena has also consulted on commercialization strategies a digital technology venture that was trying to establish itself in a traditional sector.

Dr Letizia Mortara – lm367@cam.ac.uk: is a Lecturer at the University of Cambridge. Her current focus is in the areas of Strategic Technology Management and Technology Enterprise. Specific research projects include Technology intelligence (i.e. activity set- up in order to keep abreast with the latest developments in technology) Open Innovation, and the advent of Digital Fabrication technologies in manufacturing (e.g. 3D Printing) and their implications for business. Letizia has worked within the Centre for Technology Management at the Institute for Manufacturing since 2005. Prior to this, she gained her first degree in Industrial Chemistry at the University of Bologna in Italy. After spending three years working as a process/product manager in the chemical industry, she moved to the UK where she gained her PhD in processing and process scale-up of advanced ceramic materials.
Consequences of Small Enterprises Adopting Open Innovation Strategy: Using Machine Learning to Understand User Behavior on a Platform-Based Marketplace

Managerial Summary

In the era of ongoing digital transformation, digital platforms have become one of the essential tools for open innovation strategy. Thus, an increasing number of firms are adopting digital service platforms on top of their existing online and offline channels to innovate their businesses by transforming a closed marketplace to open marketplace. Such an open market place is also called platform-based marketplace, which has characteristics of greater transparency and standardization that lead to a significant impact on market competition as well as end-user behavior. While most of the studies in this area focus on multinational high-tech enterprises, our understanding of such an open innovation business strategy in the context of small enterprises with limited resources is lacking. Therefore, in this study, we explore the impact of open innovation strategy on small enterprises when they adopt platform-based marketplaces to reach their end-users. To this end, first, we propose a theoretical framework based on transaction cost economics to explain what causes small enterprises to adopt platform-based marketplace, and subsequently, consequences of such adoption on their end-users’ behavior. Second, we collect a unique transaction data spanning over more than two and half years of individual users from a platform-based marketplace that serve the beauty salon industry. We apply machine learning methods on this rich transaction data to understand changes in the end-users’ repeat purchase behavior when they make their purchases using the platform. Our results indicate that a shift from a closed to an open market presence through the adoption of a platform-based marketplace widens the market reach and opens a new marketplace to complement the existing marketing mix. However, we also find that there is a paradox as the increase in market reach of small enterprises by participating in the platform-based marketplace is counterbalanced by a reduction in the repeat purchase behavior of their end-users. These findings are intriguing for managers struggling to understand the implications and impact of an open innovation strategy on its relationships with end-users. Insights from our study can be used to manage end-users on a platform-based marketplace effectively.

*Keywords*: open innovation; platform-based marketplace; user behavior; machine learning; digital transformation

Takeaways

1. *Digital service platform is an essential tool for open innovation business strategy for small enterprises, which transforms their closed marketplace to open marketplace.*
2. *Platform-based marketplaces, based on digital service platform, lower transaction costs thereby making transaction efficient for platform end-users. The consequence of such efficient transactions is reduction in likelihood of end-users’ repeat purchase behavior with the same service provider on the platform.*
3. *For small enterprise, the availability of actual transaction data from the platform usage as well as advancement in the data analysis methods, such as machine learning, enables a better understanding of the implications of open innovation strategy on end-user behavior in order to manage these relationships more effectively on the platform-based marketplace.*

**Anssi Smedlund** – anssi.smedlund@ttl.fi. Chief research scientist. Expertise areas: Platform economy, Transaction cost economics

**Byron Graham** – Byron.Graham@qub.ac.uk. Lecturer. Expertise areas: Machine learning methods, Data management

**Mikko Hänninen** – mikko.o.hanninen@aalto.fi. Doctoral candidate. Expertise areas: Platform-based marketplaces, Retail strategies

**Ashish Kumar** – ashish.kumar@aalto.fi. Assistant professor. Expertise areas: Marketing research, Business strategy
**Knowledge Transfer**

**Finding your peers - towards the comparison of European knowledge transfer organisations**

**Managerial Summary**

ypeer-groups. It was developed to improve the methods for assessing knowledge transfer organizations (KTOs) in Europe. KTOs are facing difficulties in finding their peers given the current lack of approaches and knowledge on the importance of variables for transnational grouping. With statistical analysis on datasets with 17 variables in 2015 and 2016, those relevant for clustering are identified in both years. In doing so, 158 European KTOs from 21 countries are clustered based on similarities in activity metrics. This is novel, as extant KTO research used fewer metrics and solely national datasets. Besides laying the foundation for the comparison of European KTOs, we point out vital choices when using the statistical approach and the important role that outliers play hence why they are not to be excluded without prior careful consideration. Our approach could be used as first step in the analysis of large international multivariate datasets in other contexts. The identification and grouping of similar organizations as well as metric development is of relevance for policy makers and research. Comparisons with peers may enable managers to conduct performance studies and make informed decisions through benchmarking.

**Keywords**: transnational peer grouping; statistical clustering approach; proof-of-concept; university-industry knowledge transfer organizations

**Takeaways**

1. an approach for the transnational grouping of organizations - based on similarities in activity metrics - is presented as a proof-of-concept with European KTO data
2. finding peer organizations across national borders is possible - the developed statistical approach provides a means to do so with multivariate international datasets
3. the study points out vital choices when using the statistical approach and the important role of outliers as well as issues with transnational datasets such as missing data due to metric-incompatibilities

**Information about the author**

Laura Kreiling – laura.kreiling@u-psud.fr: PhD candidate in management science at Université Paris-Sud in France (2016-2019), researching on practices and performance of knowledge transfer organizations. She is part of the RITM research group and the European chair on Intangibles. Laura has degrees in Strategic Project Management (MSc.,2014, distinction) and International Business (B.A.,2010) and 4-year industry experience as project manager at the intersection of academia and industry and in strategic project management: on the former, in automotive engineering in the United Kingdom (2014-16); on the latter, in the medical device industry at an international healthcare stock company Germany (2010-12).