

# Challenges when university researchers work collaboratively with industry in aviation safety:

## Why can't we all just get along?



Dr Selina Fothergill PhD  
Principal Supervisor Organisational Psychologist

# Abstract

## Part One

- Increasing interest exists for collaboration between university researchers and industry partners, however there have been few attempts to analyse the nature of these collaborations (Calvert & Patel, 2003)
- Void in terms of the challenges and benefits
- Survey findings revealed the most frequent challenges and benefits
- Results provide an indication as to which areas to focus on, in order to improve future collaborations

## Part Two

- Analyses are being conducted to identify challenges within other safety domains
- Analyses are being conducted to identify concerns that may exist within international partnerships
- Consistent responses with the Australian, aviation sample

# Part One

- A university-industry collaboration (UIC) is a project-based collaborative research relationship between universities and companies aiming at the generation or transfer of new products, technologies, or processes (Hemmert, Bstieler & Okamuro, 2014)
- Increasing UIC is a primary policy aim in most developed economies
- Research efforts have typically focused on technology transfer, intellectual property, environmental factors affecting the entrepreneurial orientation of researchers and specific university performance outcomes (Bozeman, 2000; Baruffaldi & Landoni, 2012)
- Literature silent on the dynamics behind such successful combinations

**H1.** *Participants will most frequently describe the following challenges: having different goals, cultures and work styles; the dissemination of results; changing the research agenda to meet industry needs; commitment, time conflicts and coordination problems and the need for better organisation.*

**H2.** *Participants will most frequently describe the following benefits: access to government funding and financial resources; improving national competitiveness, innovation and reputation; better collaborations and scientific research outcomes; knowledge and skill transfer and better work opportunities and practical experience.*

# Part One

- The most frequently described challenges by academics were: that evidence-based policy is time consuming and costly, that collaborations with industry are difficult because there is a high turnover of staff during the project and the projects are often short-term and reactive in nature.
- The most frequently described challenges by industry were: the need to manage time frames and resources, the need to understand the operational environment and that outcomes need usability and relevance.
- The most frequently described benefits by academics were: conducting important, scientific work that has economic and social benefits; better training opportunities and teaching materials for students and having funding and support from government collaborations.
- The most frequently described benefits by industry were: access to better knowledge, skills and resources; quality research that is affordable and cost effective and having globally published and independent information.
- These challenges and benefits are consistent with expectations from hypotheses one and two

# Part Two

- Most UIC occurs in medicine and chemistry, while industrial and information engineering show the highest percentage of co-authored articles (Abramo, D'Angelo, Di Costa & Solazzi, 2009)
- Need to broaden the domains where UIC is examined
- Safety-critical industries provide an ideal domain to examine UIC, as they commonly use UIC to address risk management issues
- UIC research should incorporate a broader international sample (Abramo et al., Petruzelli, 2011)

# Part Two

- A second study surveyed those who have worked in UIC research partnerships internationally, as well as those who have worked in UIC research partnerships in other safety domains
- Aim is to determine whether people describe similar challenges and benefits when broadening it to an international and a non-aviation sample
- Preliminary findings have revealed similar responses from the international sample compared to the domestic sample and from those who have worked in other safety domains



# Who said it? Aviation or other domain?



## **Difficulty**

*“Funding. Getting funding and the time it takes to go through the funding process. It’s a catch 22. Goes through a number of approval processes. Sometimes it is provided subject to other funding. Funding processes are also long and convoluted and highly competitive.”*

## **Benefit**

*“It’s good value for money. It provides an evidence based approach on which to base policy decisions on. The science gives it grounding and justification.”*



# Who said it?

## Aviation or other domain?



### **Difficulty**

*“Funding.”*

### **Benefit**

*“Cost benefit. Having the expertise available and not having to pay for it. Need to provide that mentoring with a cost benefit. Safety implications that can be gained from that. Can find out things you didn't already know, so it's a win win, enhanced safety systems and aligned to the operational business model. Sits with outcome based, flexible means of compliance to achieve the objective.”*



# Who said it? Australian or international

## **Difficulty**

*“Most research is done by young researchers with little practical background or domain experience, in industry research is done by people with much practical/domain experience.”*

## **Benefit**

*“New fresh ideas from academic partners could help industry with solutions that will create a breakthrough.”*



# Who said it? Australian or international

## **Difficulty**

*“Time and other resources it sometime takes to bring researchers up to speed with understanding the problem space. There is a perception that you just grab the experts and get on with it. However, the reality is that it takes time and effort to provide the right context to get the best outcome.”*

## **Benefit**

*“Differing and new perspectives on the way to approach a topic.”*

# Similarities

## Difficulties

- Funding
- Understanding the operational context

## Benefits

- Value for money
- New ideas/perspectives



# Conclusions

- Ongoing analysis
- Results provide valuable insights into the predicaments and benefits when conducting applied research within UIC partnerships
- Provides an opportunity to understand UIC in greater detail and implement solutions, in order to improve future collaborations

# Publication of work

Fothergill, S. (2017). Challenges when university researchers work collaboratively with industry in aviation safety: Why can't we all just get along? *Proceedings of the 61st Annual Meeting of the Human Factors and Ergonomics Society*. Austin, Texas: October 9-13.

# References

- Abramo, G., D'Angelo, C. A., Di Costa, F., & Solazzi, M. (2009). University–industry collaboration in Italy: A bibliometric examination. *Technovation*, *29*, 498-507.
- Banal-Estañol, A., Jofre-Bonet, M., & Lawson, C. (2015). The double-edged sword of industry collaboration: Evidence from engineering academics in the UK. *Research Policy*, *44*, 1160-1175.
- Baruffaldi, S.H., & Landoni, P. (2012). Return mobility and scientific productivity of researchers working abroad: The role of home country linkages. *Research Policy* *41*, 9.
- Becker, J., & Lißmann, H.-J. (1973). Inhaltsanalyse - Kritik einer sozialwissenschaftlichen Methode. Arbeitspapiere zur politischen *Soziologie* 5. München: Olzog.
- Bozeman, B. (2000). Technology transfer and public policy: A review of research and theory. *Research Policy* *29*, 627–655.
- Bozeman, B., & Gaughan, M. (2011). How do men and women differ in research collaborations? An analysis of the collaborative motives and strategies of academic researchers. *Research Policy*, *40*, 1393-1402.
- Callaert, J., Landoni, P., Van Looy, B., & Verganti, R. (2015). Scientific yield from collaboration with industry: The relevance of researchers' strategic approaches. *Research Policy*, *44*, 990-998.
- Calvert, J., & Patel, P. (2003). University-industry research collaborations in the UK: Bibliometric trends. *Science and Public Policy*, *30*, 85-96.
- European Commission. (1995). *Green Paper on Innovation*. Luxemburg.
- Hemmert, M., Bstieler, L., & Okamuro, H. (2014). Bridging the cultural divide: Trust formation in university–industry research collaborations in the US, Japan, and South Korea. *Technovation*, *34*, 605-616.
- Huarng K. H. (2010). Essential research in technology management. *Journal of Business Research*, *63*, 451–3.
- Lai, W. H. (2011). Willingness to engage in technology transfer in industry-university collaborations. *Journal of Business Research*, *64*, 1218-1223.
- Lai, W. H., & Chang, P. L. (2010). Corporate motivation and performance in R&D alliances. *Journal of Business Research*, *63*, 490–6.
- Motohashi, K. (2005). University–industry collaboration in Japan: the role of new technology-based firms in transforming the National Innovation System. *Research Policy*, *34*, 583–94.
- Petruzelli, A. M. (2009). The impact of technological relatedness, prior ties, and geographical distance on university–industry collaborations: A joint-patent analysis. *Technovation*, *31*, 309-319.
- Santoro, M. D., & Gopalakrishnan, S. (2000). The institutionalization of knowledge transfer activities within industry–university collaborative ventures. *Journal of Engineering and Technology Management*, *17*, 299–319.
- Slotte, V., & Tynjälä, P. (2003). Industry–university collaboration for continuing professional development. *Journal of Education and Work*, *16*, 445–63.

# Thank you

[selina.fothergill@uqconnect.edu.au](mailto:selina.fothergill@uqconnect.edu.au)

[selina.fothergill@casa.gov.au](mailto:selina.fothergill@casa.gov.au)