Human Sciences and Technologies Advanced Research Institute STANFORD UNIVERSITY

Study on university-business cooperation in the US
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Outline

1. Objectives
2. Theoretical framework
3. Selection of case studies
4. Initial contexts/origins of UBC
5. Stakeholders
6. Financial resources
7. Motivations
8. Forms of UBC
9. Objectives of UBC
10. Benefits and drivers
11. Barriers
12. Success factors
13. Conclusions

Objectives

Overall objective:

- Support the work of the EC and Member States within the Education and Training Work Programme by providing information on and examples of UBC in a North-American context.

Specific objective:

- Provide an exploratory study on UBC best practices across the US and Canada, for distilling fundamental characteristics and application in a European context

- Particular focus on federal/state frameworks

- Ten case studies from the US and five from Canada

Theoretical framework

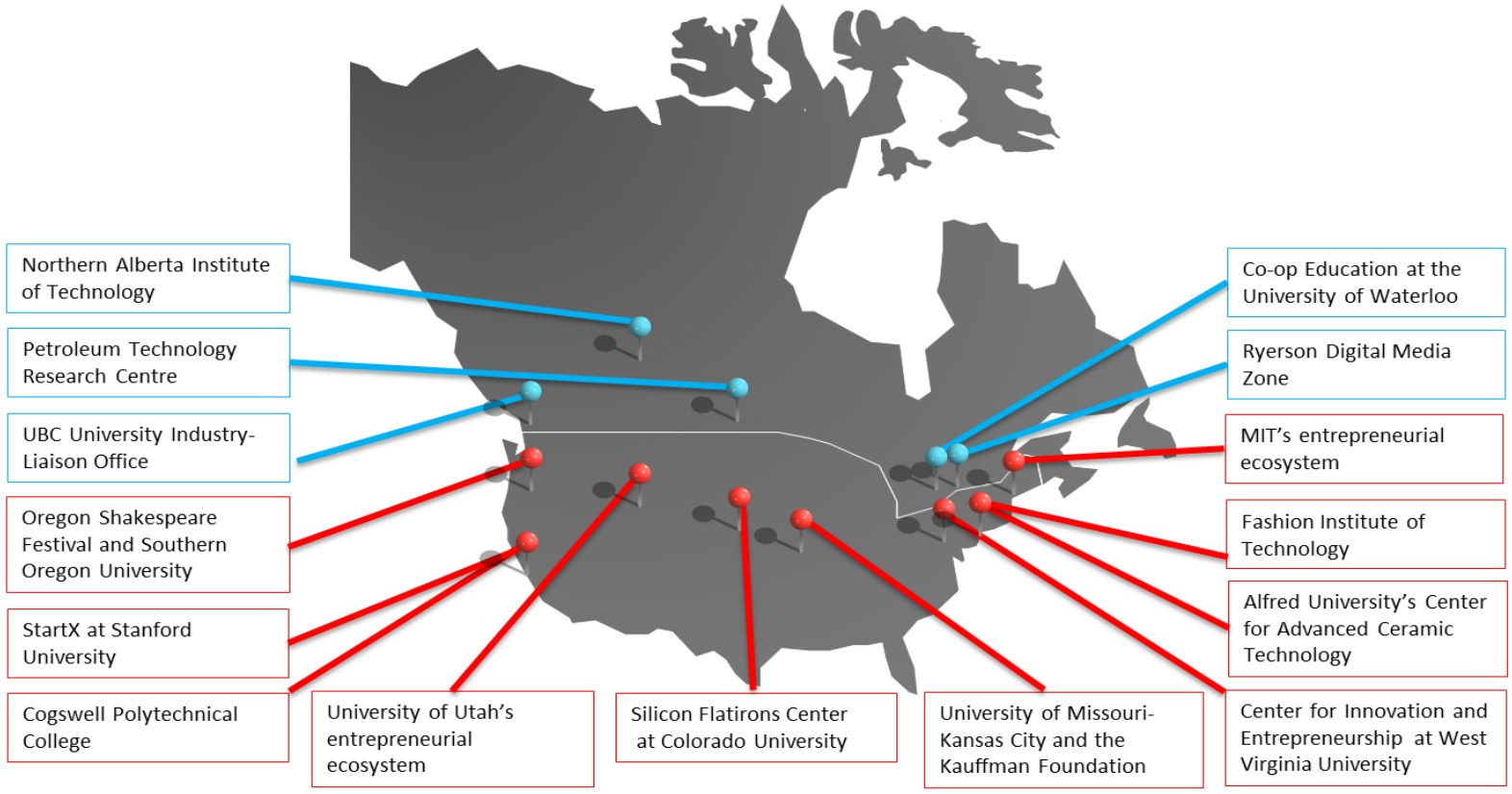
- **Five streams of literature**
  - The National Innovation Systems model
  - Linear and non-linear (networked) innovation models
  - Elements of knowledge-based firm strategic management theories
  - The ‘academic capitalism’ theory
  - **The Triple Helix model**

- All these approaches acknowledge the role of universities and business firms in the innovation process, **but diverge on the size of the role granted to universities** and the attention paid to university interaction with business and government.

Selection of case studies

Selection criteria:

- balanced geographical coverage
- public and private ownership of the HEIs,
- different institutional types
- mix of well-known and less known HEIs performing various UBC forms



Initial context/origins of UBC

- Long-standing UBC in **highly research-intensive universities** with a strong entrepreneurial environment
  - MIT, Technology Ventures Development at University of Utah, Silicon Flatirons Center at Colorado University, StartX at Stanford University, the University-Industry Liaison Office of the University of British Columbia and the University of Waterloo.

- More recent UBC in **less research-intensive universities** and less established entrepreneurial environments
  - the Center for Innovation and Entrepreneurship (CIE) at West Virginia University's College of Business & Economics, the cooperation between the University of Missouri-Kansas City and the Kauffman Foundation (UMKC-KF).

- Long-standing UBC in **Master's colleges and universities**

  - Alfred University's Center for Advanced Ceramic Technology (CACT), Fashion Institute of Technology (FIT);

- Recent UBC in **undergraduate education colleges**
  - Cogswell Polytechnical College of Sunnyvale, California, the Ryerson Digital Media Zone (DMZ) of the University of Ryerson and the NovaNAIT Center of the Northern Alberta Institute of Technology (NAIT);

- A specific form of UBC spun-off from the university and grown into a world-famous art event with **strong social, economic and cultural impact on the local community**
  - the Oregon Shakespeare Festival and Southern Oregon University (OSF-SOU).

- Recent UBC aimed **to develop the national economy**
  - Petroleum Technology Research Center (PTRC)

Stakeholders

Broad and varied range of UBC stakeholders:

- **University stakeholders** (academic departments and units, organizations involved in technology commercialization, faculty, students etc.)
- **Business stakeholders**, from high-tech firms to legal firms, venture capital firms, university start-ups, etc.
- **Local entrepreneurs** involved in teaching and various forms of entrepreneurship education.

Financial resources

- Financial sources: university, partner business firms, alumni, entrepreneurs and government agencies

- Government funding seems to be a key differentiating factor:
  - Cooperation financed by university, business, alumni, entrepreneurs **and government** e.g. MIT, CACT, FIT, Technology Venture Development, CIE, the PTRC at the University of Regina, and the University of British Columbia
  - Cooperation financed by university, business, alumni, entrepreneurs **with minimum government funding**, e.g. Silicon Flatirons Center at Colorado University, University of Missouri Kansas City and Kauffman Foundation (UMKC-KF), StartX, Cogswell Polytechnic College, the co-op programs at the University of Waterloo, Ryerson's DMZ and NovaNAIT

UBC Motivations

- Dominant motivations include: **collaboration as a strategic institutional policy, diffusion of innovation, training students to the professional environment, providing employment**

- More specific UBC motivations derived from the specific profile of each case study:
  - Institutions with stronger research capabilities and capacity to generate high technologies with commercial potential: **commercialization** of technologies, *e.g.* MIT, CACT, FIT, Technology Venture Development, CIE, University of British Columbia, Waterloo, PTRC.

  - Institutions with a stronger focus on the educational mission: **strengthening of their educational mission**, e.g. Cogswell Polytechnical College, OSF-SOU, StartX, and the Silicon Flatirons Center, Ryerson, NAIT.

Forms of UBC

- US
  - knowledge sharing & transfer
  - applied innovation and involvement of academic staff and students in solving specific business problems
  - research partnerships
  - entrepreneurship education and promotion

- Canada
  - forms are varied, most important form is research activities

Objectives of UBC

- **‘Internal’ objectives** focused on strengthening the research and education capacity of the university, while benefitting both students and faculty;

- **‘External’ objectives** focused on strengthening the links with the local and regional community, including business firms, government agencies, professional associations, entrepreneurs, venture capitalists, etc.

Benefits and drivers

- **Benefits** exist for all stakeholders, from students and faculty to business partners and the local community

- **Drivers** of UBC:
  - institutional culture of collaboration, research, entrepreneurial education and technology commercialization
  - availability of excellent human resources
  - availability and stability of financial resources,
  - the existence of a university-business nexus
  - a favourable environment for education, research, innovation and entrepreneurship.

Barriers to UBC

- Very early development stage of inventions that requires additional before licensing,
- Financial sustainability of the technologies,
- Lack of or insufficient financial resources for sustaining UBC,
- Lack/scarcity of experienced human resources,
- Lack of UBC centralization at the administration level.

Impact of UBC

- **‘Internal impact’ on the university**, arising from the commercialization of university research and technologies and the revenues it generates to the university, as well as an **impact on faculty and students**, measured by tracking student and alumni experience and employability

- ***‘*External’ impact on the local and state economy**, measured by total revenue to the local and state economy brought by university spin-offs, jobs created for students and other employees by university spin-offs and start-ups

Success factors

- Presence of individuals with significant business experience
- Involvement of business professionals and entrepreneurs in academic entrepreneurship education and program development
- Involvement of the local business, technology and entrepreneurship community in university governance and the attraction of private funding
- Creation of a university-wide system for entrepreneurship and collaboration with business
- Development of universities' capacity to provide problem-solving and creativity to industry partners;
- Allowing enough time for UBC to flourish, and developing the capacity to manage expectations on both sides;
- Taking advantage of the economic, financial, human, knowledge resources of the environment
- Being aware of the impact of different funding sources and the different fundraising capacities
- Understanding the different stages of UBC development and managing them accordingly.

Conclusions

- There are important differences between the economic, social, cultural, financial, educational, and regulatory frameworks between these countries and Europe

- The funding sources and mechanisms that universities access are significantly different - predominance of public funding in Europe

- The relationship between universities and the local community not only facilitates UBC, but also fosters the contribution of UBC to the regional economy

Conclusions (cont.)

- The ‘European paradox’ still exists and could be further reduced by increasing the scope and intensity of collaboration at the university-business interface and beyond:
  - Increasing the involvement of business people in European universities’ entrepreneurship education activities
  - Increasing the mobility of individual stakeholders
  - Increasing the amount and diversity of private capital contributing to academic activities
  - Increasing the participation of individual stakeholders in university governance.
  - Broadening the spread of entrepreneurship teaching and research centres
  - Increasing the involvement of students in entrepreneurial activities
  - Changing social acceptance of the ‘entrepreneur’ and the culture of entrepreneurship

THANK YOU!

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