

How can universities promote academic Spin-Offs? The case of Swiss Universities of Applied Science (UAS)

**2nd WORKSHOP, 25. September 2019
Olten, Switzerland**



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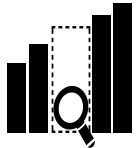
Richard Blaese, PhD student
Noemi Schneider, MSc
Pietro Morandi, Prof. Dr.
Brigitte Liebig, Prof. Dr.



SITUATION

Science based spin-offs are becoming increasingly important for economic and social progress in Switzerland.

In-depth knowledge is still lacking about how to promote spin-off creation and about motivating specific target groups as for example female academics.



SPOF- PROJECT

Knowledge and information

- about formal/informal framework conditions for spin-off creation at Swiss UAS
- About intentions, activities, and needs of academic founders in the course of spin-off-formation



OUTCOME

Recommendations

- for political action in research & development
- for the promotion of innovation and knowledge transfer at universities.

METHODS

1. Analysis of documents and statistical data (e.g. financing structures, offers, websites etc.) (2017/18)
2. Survey on funding conditions; knowledge transfer centers at 6 UAS (2018)
3. Interviews with the heads of start-up centers and equal opportunities officers at 7 UAS (2018)
4. Interviews with founders (n=40) from 7 UAS (2018/19)
5. Online survey on framework conditions for spin-off activities, attitudes and needs; scientific staff of 7 UAS (n=8'905) (2019)



Aims of this Workshop

- Discuss current conditions for spin-off projects at UAS in Switzerland based on empirical data
- Achieve a better understanding of the framework conditions for spin-off activities at UAS for male and female employees of all personnel categories.
- Develop ideas how to foster the spin-off potential of staff members at Swiss UAS.
- Get to know each other (again), as well another UAS

Programme	
13:00 – 13:10	Welcome and introduction
13:10 – 13:40	<i>Hidden champions? Spin-off potentials and conditions for spin-off activities at Swiss Universities of Applied Science"</i> Pietro Morandi, FHNW
13:40 – 14:10	<i>"Entrepreneurial Climate at Swiss Universities of Applied Sciences - A Comparative Perspective of Science and Humanities"</i> Noemi Schneider, FHNW

Workshops: 14:15 – 15:00h

Work session I *"Possibilities and limits for spin-off promotion by knowledge transfer offices at UAS"* – **Room A284**

Work session II *"Which measures could be most effective in supporting spin-off activities of male/female UAS staff on different levels, and in different disciplines?"* **Room A285**

Work session III *"Which promotion and funding policies could invite researchers to invest into spin-offs at UAS? And to which degree is this desirable?"* – **Room A286**

15.00-15.20



Programme	
15:20 – 15:40	Short discussion of results from work session I, II, III
15:40 - 16:10	<i>The interactive online-map on entrepreneurial activities at Swiss UAS</i> Richard Bläse, FHNW
16:10 - 16:25	Discussion and take home messages
16:30	Thank you & Good Bye



Hidden Champions

Spin-off potentials and
conditions for spin-off activities
at Swiss Universities of
Applied Science

Pietro Morandi

The Online-Survey 2019

- n=8'905 scientists at Swiss public UAS were invited to participate via e-mail in Jan. 2019
 - Pedagogical universities of applied sciences and the private UAS were excluded
 - Topics: start-up intentions, assessment of university-related conditions for start-up activities, characteristics of possibly already established companies.
- *Total data set: n= 3'743 (uncor. response rate (RR): 42.0%, n=8'905)*
 - *Filtered (Individuals with missing values for personnel category, etc. have been removed): n=2'381 (corrected RR: 26.7%)*



The Online-Survey 2019

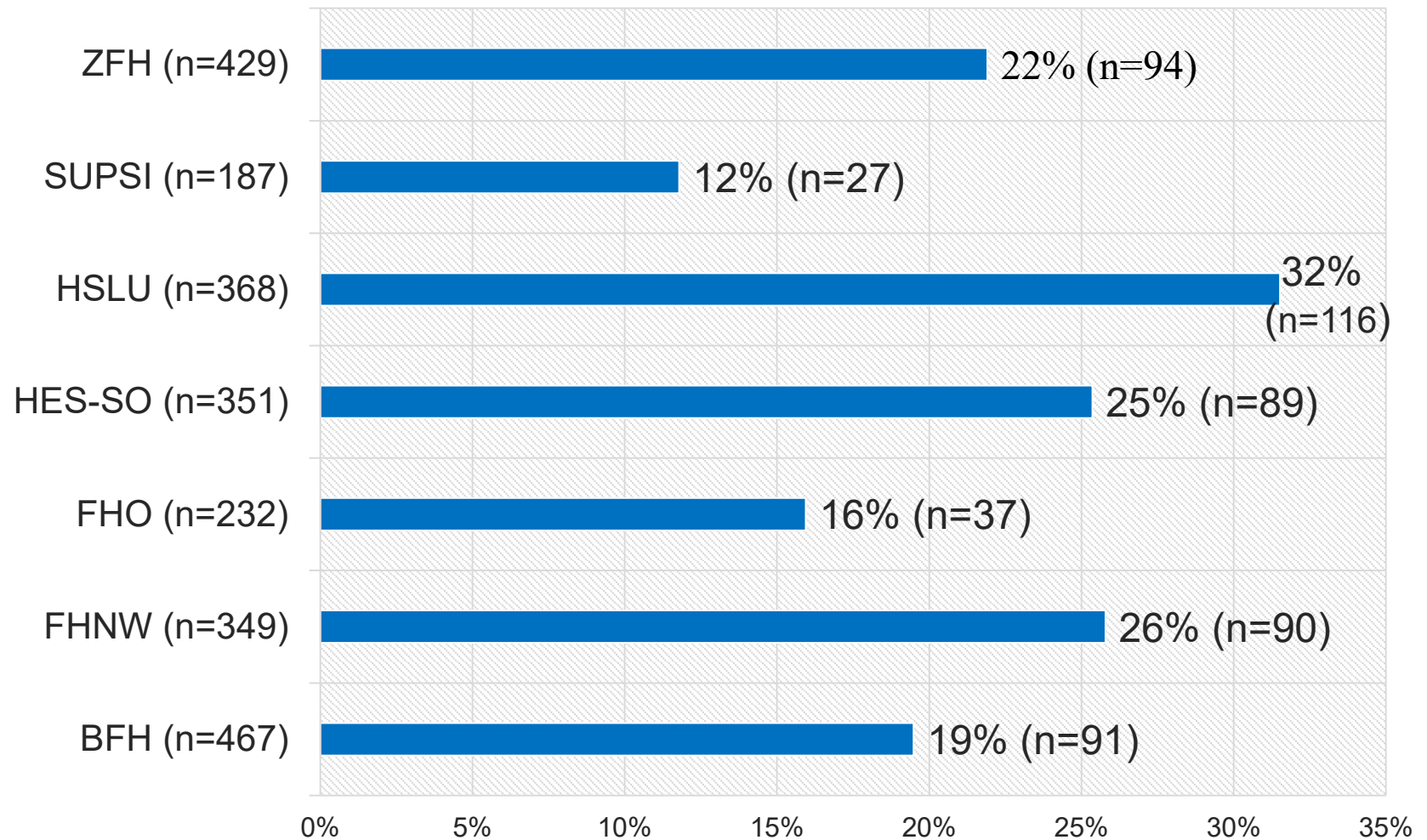
- On average, respondents were 44 years old ($SD = 10.9$, *range:19-69*)
- 64.7%, of respondents were male ($n=1'540$).
- > 51.2% of the respondents were lecturers with management responsibility (25.6%, $n=608$) or lecturers without management responsibility (25.6%, $n=609$).
- 39.4% ($n=935$) of the respondents were assistants and scientific staff members of the universities.



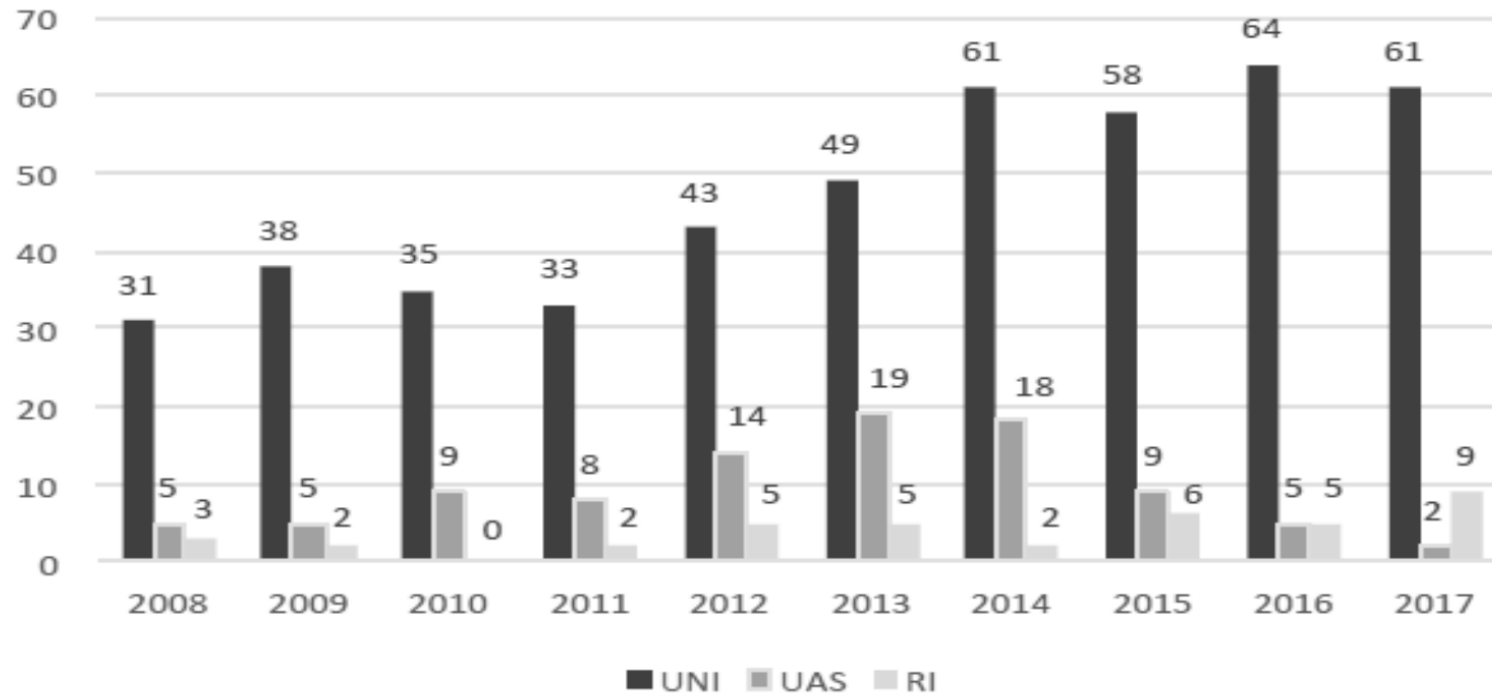
Start-up or spin-off experience at universities of applied sciences (UAS)

	Founding experience (n=544)	No founding experience (n=1'837)	Total (n=2'381)
Men	431 (79.2%)	1'109 (60.4%)	1'540 (64.7%)
Women	113 (20.8%)	728 (39.6%)	841 (35.3%)

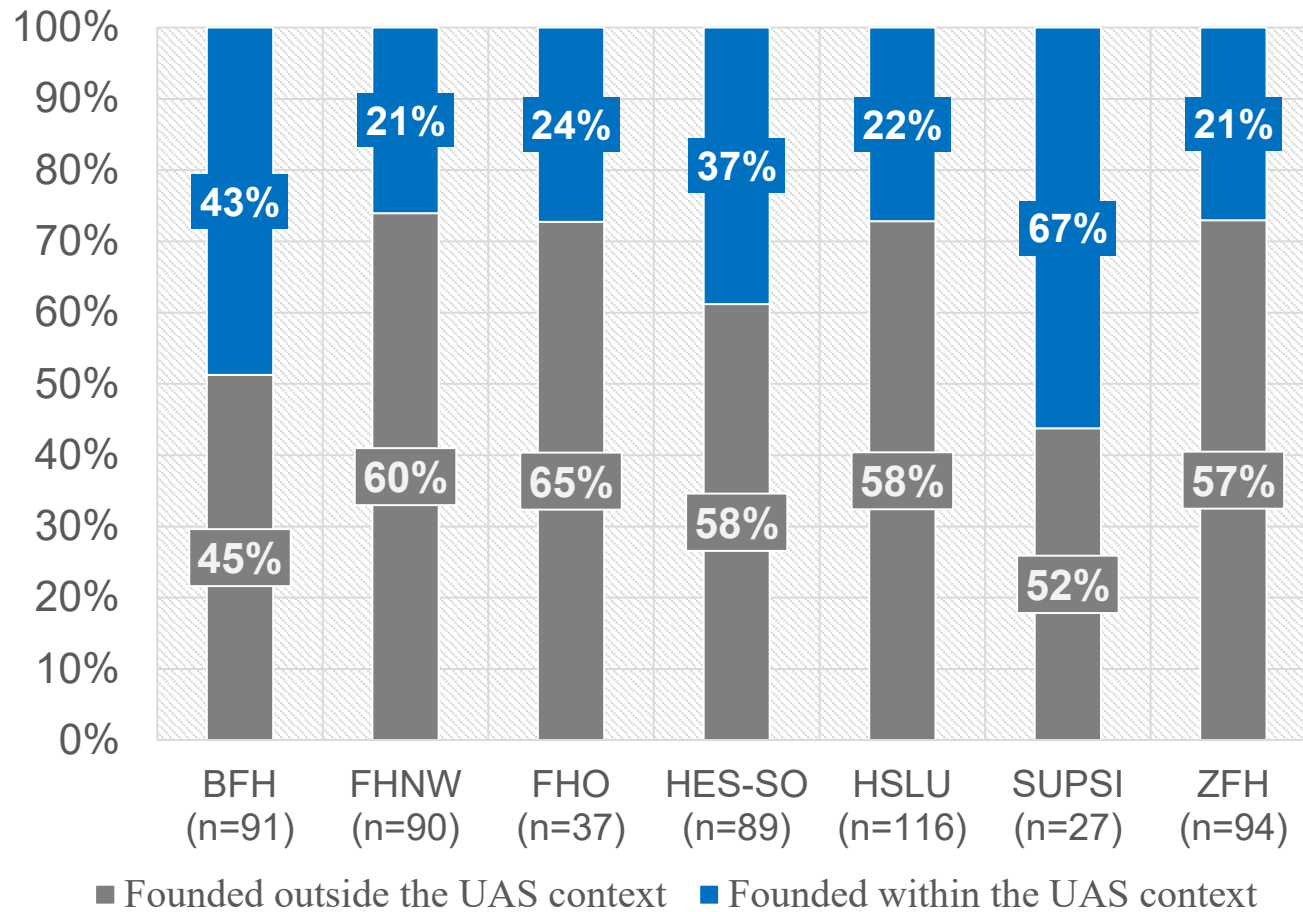
Number of scientists with own entrepreneurial (start-up/spin-off) experience ($n_{\text{founder}}=544$; 22.8%)



The SwiTT report 2018 draws a different picture:



Entrepreneurial activities outside and within the context of Universities of Applied Sciences (n_{founder}=544)

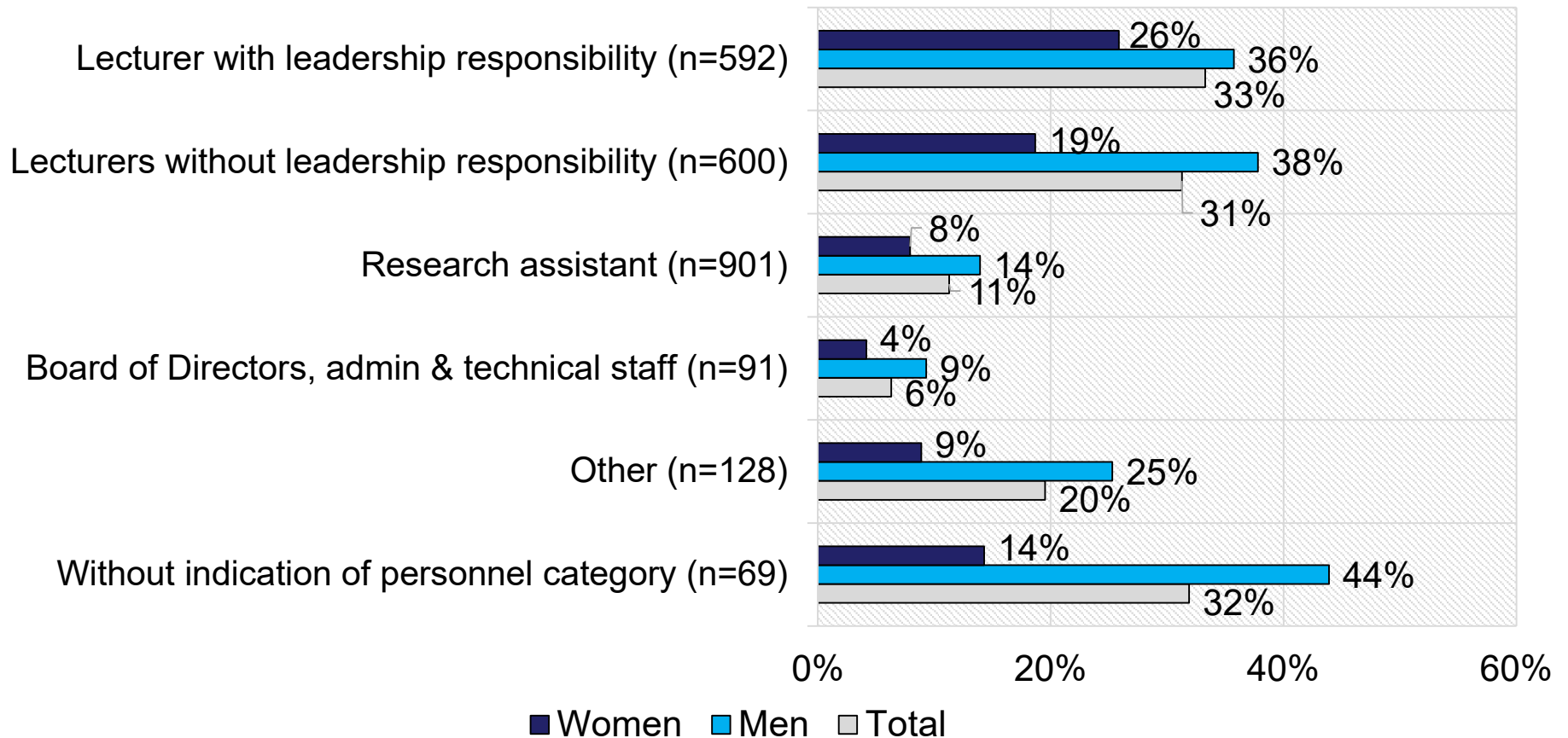


The majority of staff members with founding experience did/do their founding projects outside their work context

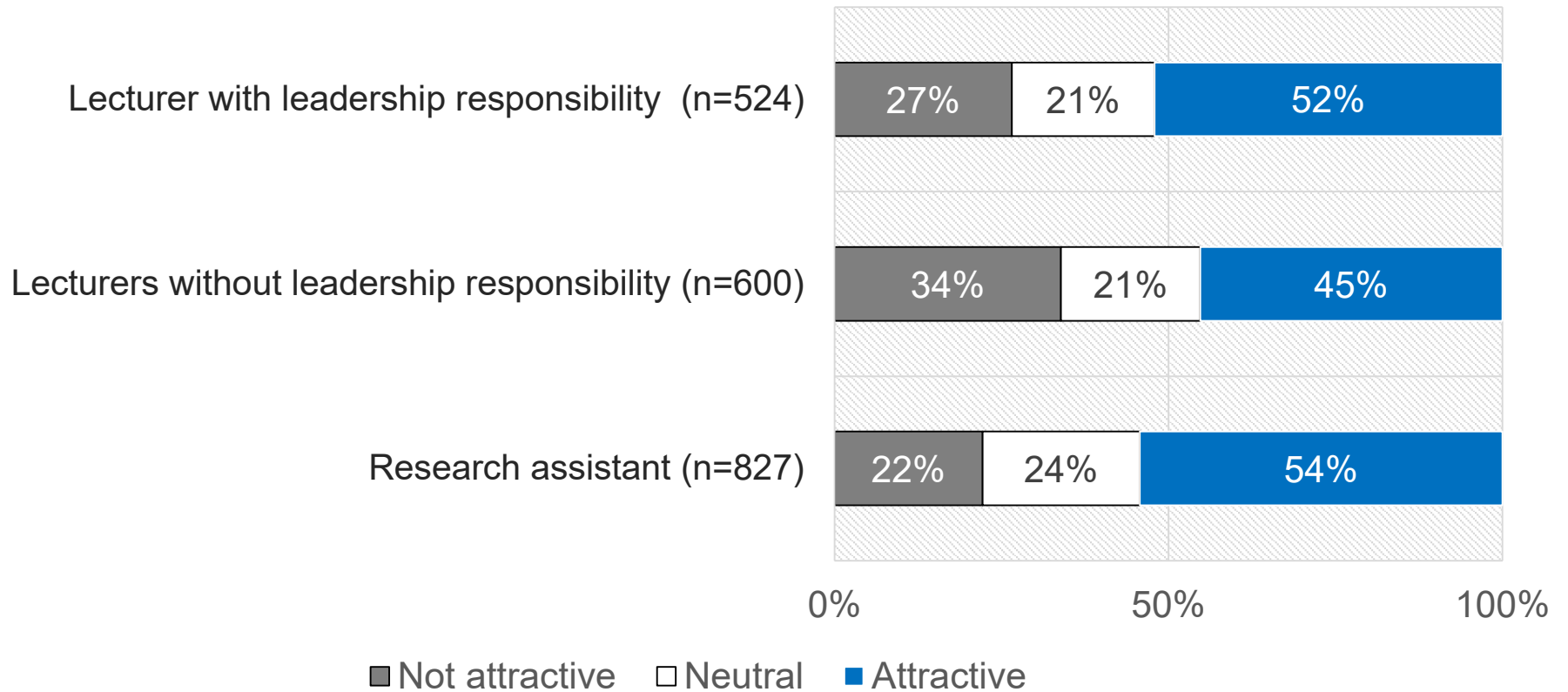
Founding experience is available in many departments

Disciplines	Founding experience (n=544)	No founding experiences (n=1'837)	Total (n=2'381)
STEM and architecture	245 (45.0%)	809 (44.0%)	1'054 (44.3%)
Health Science	28 (5.1%)	196 (10.7%)	224 (9.4%)
Agronomy	11 (2.0%)	76 (4.1%)	87 (3.7%)
Economics	126 (23.2%)	297 (16.2%)	423 (17.8%)
Social Work	22 (4.0%)	194 (10.6%)	216 (9.1%)
Design, Arts and Music	102 (18.8%)	219 (11.9%)	321 (13.5%)
Other social- und cultural Sciences	10 (1.8%)	46 (2.5%)	56 (2.4%)

Start-up and spin-off activities by personnel category



Positive attitude towards starting a business in all categories of personnel



Numbers of employees in founded companies (n=544)

31.8% (n=173)	Founders employ(ed) no further employees
12% (n=66)	1 employee
16.2% (n=88)	2–4 employees
5.1% (n=28)	5–10 employees
5.1% (n=28)	> 10 employees
29.6% (n=101)	Did not provide any information (missings)

Conclusions

- ❖ Experience with setting up companies is widespread in many departments of Swiss universities of applied sciences - but surprisingly little visible within the institution itself.
 - ❖ Starting a business is part of the DNA of the scientific staff of Swiss universities of applied sciences.
 - ❖ The start-up and spin-off potential of universities of applied sciences is therefore likely to be very high...
- ***But why do so few start-up projects result from current research practice, given that the start-up affinity at universities is so strong?***

Thank you for your attention!



Framework conditions for spin-offs and start-ups

<http://spof-map.ch>

Entrepreneurial Climate at Swiss Universities of Applied Sciences

A comparative perspective of science and humanities

Noemi Schneider, MSc.



Introduction

- In the course of the promotion of knowledge transfer at universities, the importance of the **humanities and social sciences** for academic entrepreneurship has increasingly gained attention (EU Commission 2014).
- Also in Switzerland not only the awareness of the topic but also support measures for **social and artistic innovations** have increased (cf. Bornstein, Pabst & Sigrist, 2014).
- However, little is known about support for entrepreneurial activities at Universities of Applied Science – especially not from the perspective of its academic staff.

The Entrepreneurial Climate (Smallbone et al. 2010)

Formal conditions

Support structures for spin off's at the universities such as;

the use of infrastructure, financial support and access to incubators and science parks

Informal conditions

Visibility of entrepreneurship as a university topic

Perceived **social support** of entrepreneurial activities

Entrepreneurial **role models** (colleagues, superiors etc.)

Entrepreneurial Climate

The perception of scientists of the **university context as supportive for entrepreneurship**

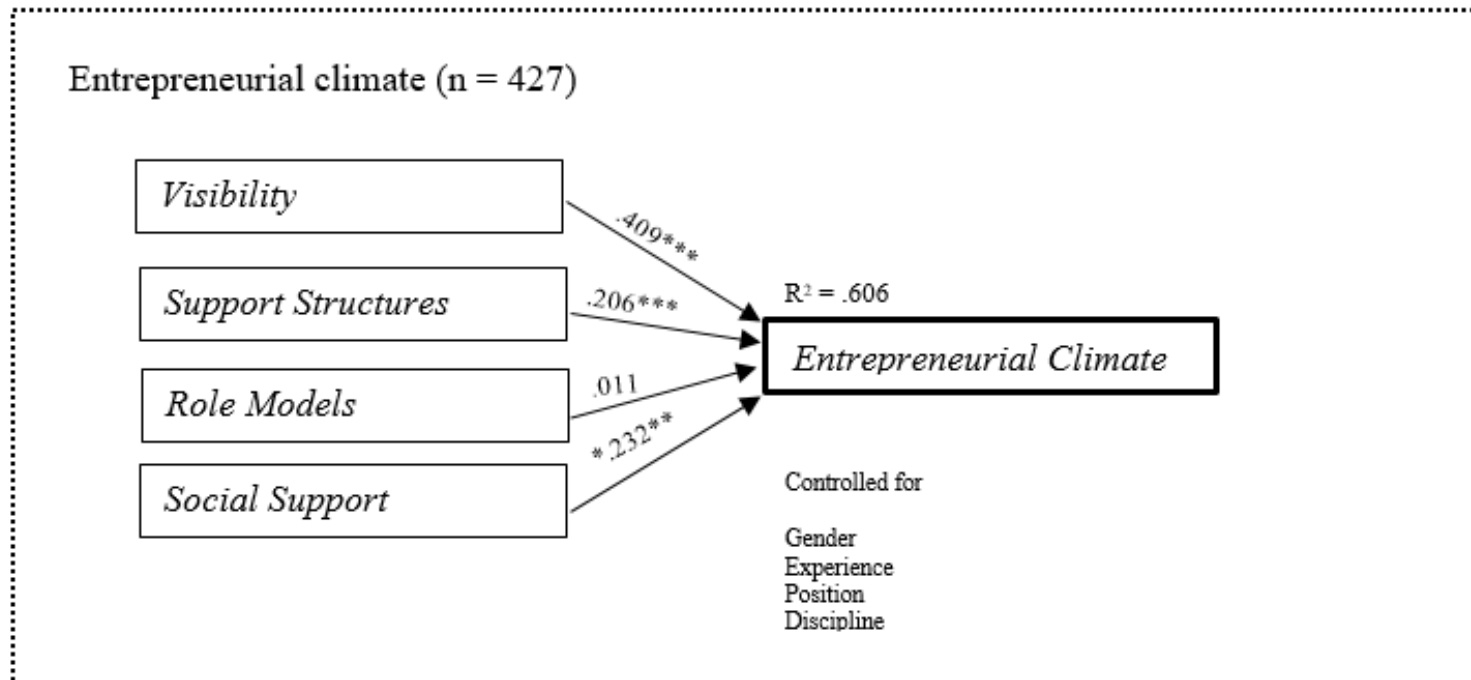
Methods

1. **Online Survey** (Jan-March 2019) of 3'253 scientists from 7 UAS
2. **Qualitative Interviews** with founders from HSS and STEM disciplines (n=16)

	Women	Men	Total
Sample	5	11	16
Disciplines			
HSS	5	2	7
STEM	0	9	9

Results I

Importance of informal dimensions of entrepreneurial activities at Swiss UAS

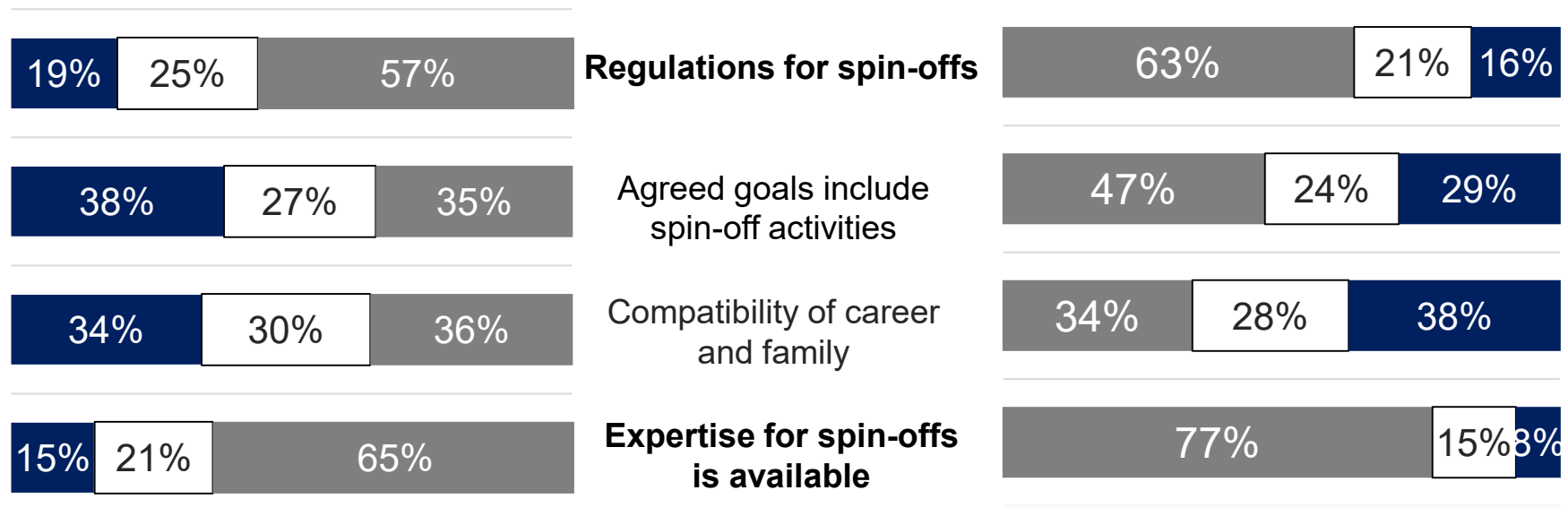


OLS-Regression. Note: Standardized coefficients are given. * $p < .05$, ** $p < .01$, *** $p < .001$

Perception of formal conditions for spin-off creation

(n=636)
STEM-DISCIPLINES

(n=535)
HSS-DISCIPLINES

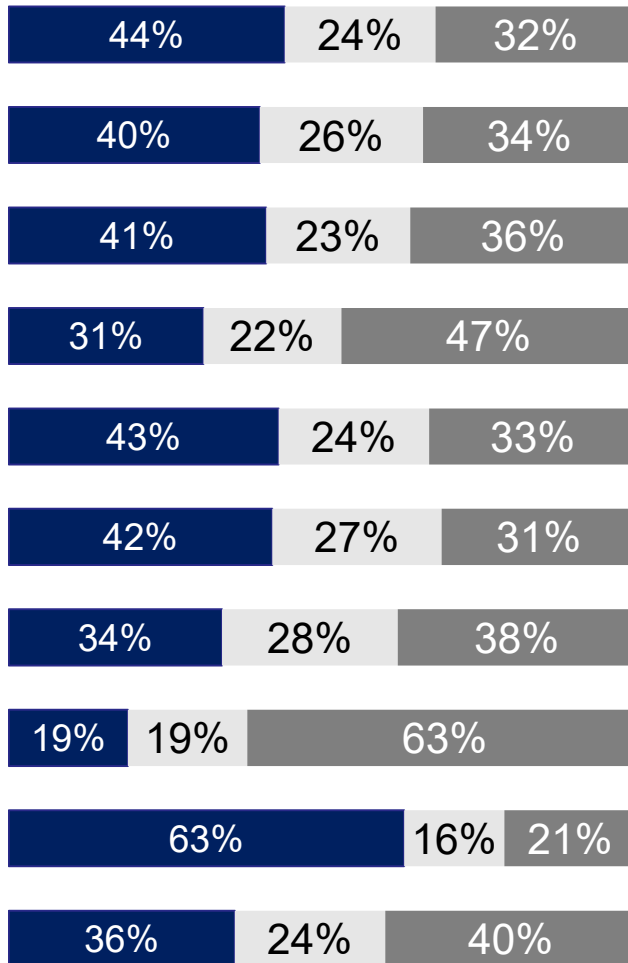


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Perception of informal conditions for spin-off creation

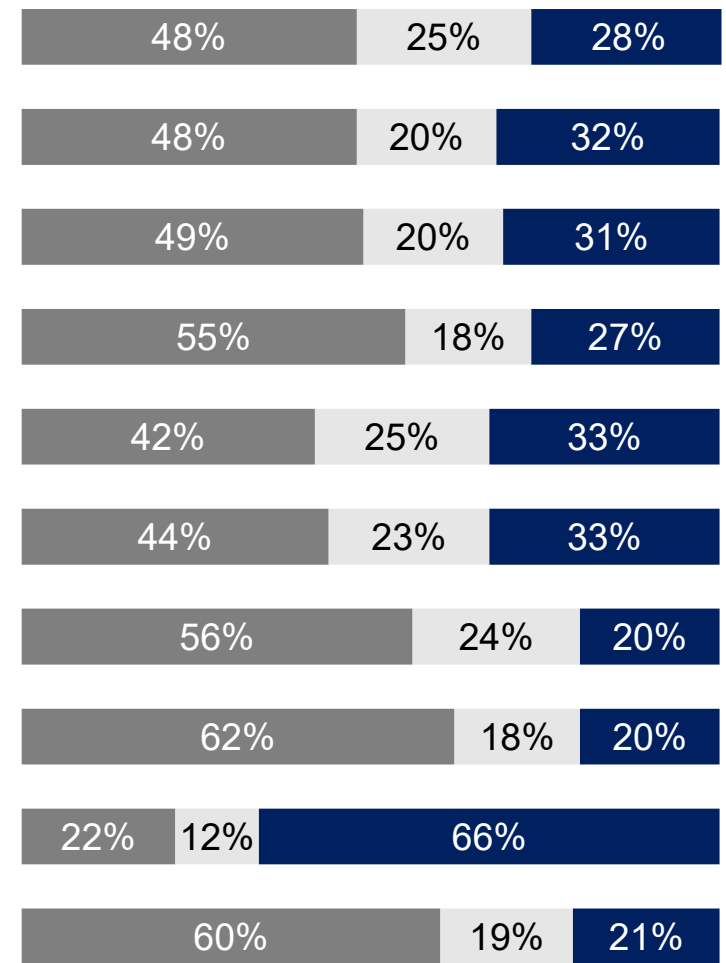
(n=636)

STEM-DISCIPLINES



(n=636)

HSS-DISCIPLINES



■ Trifft nicht zu ■ Neutral ■ Trifft zu



Results II

The characteristics of the entrepreneurial climate in HSS and STEM disciplines

Dimensions of entrepreneurial climate	HSS	STEM
Support structures	Unseen	Bureaucratic
Visibility	Dethematized founding activity	Thematized foundig activity
Social support	Marginalized, externalized	Homogeneous, internalized
Role models	Outside the discipline	Inside the university and discipline

Conclusions

- Considerable differences in the perception of conditions for spin off creation in STEM and HSS disciplines.
 - Lower **awareness of spin off projects** in HSS than in STEM
 - **Lower expertise for spin-offs** perceived in HSS than in STEM
 - Successful **founders better known** and respected in STEM
 - Fewer **social support from superiors** in HSS than in STEM
 - But more **social support from colleagues** in HSS and in STEM

Recommendations

- **Improvement of the visibility of entrepreneurship**
 - Providing spin-off-relevant information.
 - Showing successful founders from various disciplines.
- **Promotion of social support in the university context**
 - Sensitize superiors and colleagues as an important target group.
- **Establish “entrepreneurial career paths” (Hesse 2015) in HSS disciplines**
 - Establish regulations on founding spin-offs in social innovation and in art/culture
 - Entrepreneurship as a possible career option for HSS disciplines.

Thank you for your attention!



spof.ch - An interactive map of entrepreneurial activities at Swiss universities of applied sciences



Richard Bläse
PhD student, Univ. Basel

- I Research on academic start-ups / spin-offs at UASs
- II Methodology
- III Increasing the visibility and transparency of results
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INTRODUCTION



Academic entrepreneurship is considered as an important economic driver (Ping 1980;OECD 2003) and refers to the creation of spin-offs, based on **intellectual properties (IP)** developed at universities.

Third Mission includes the commercialization and promotion of academic entrepreneurship activities (Rasmussen et al. 2015, Bygrave & Minniti, 2000; Etzkowitz, 1983, Kirby et al 2012).

The institutional context in which researchers are embedded could either stimulate them or discourage them from becoming entrepreneurs (Huyghe & Knockaert, 2015).



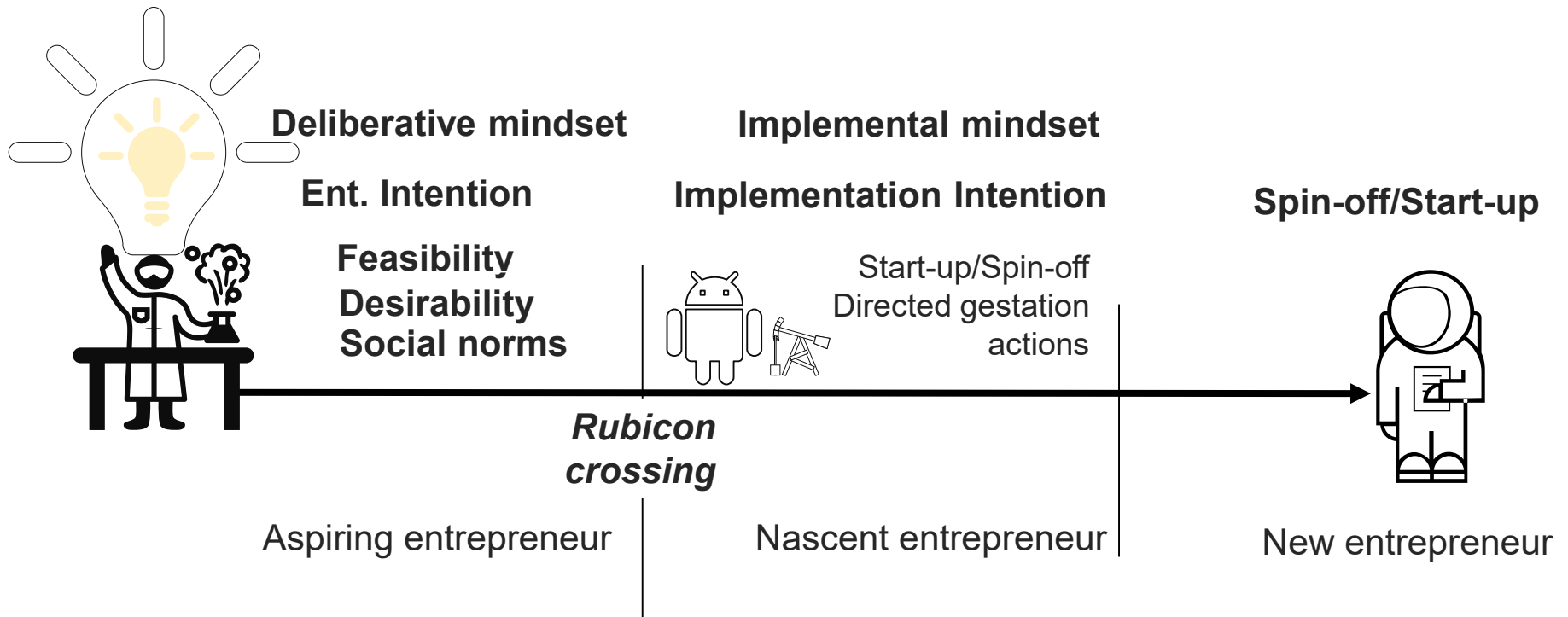
RESEARCH GAP

What entrepreneurial conditions (formal and informal) exist at Swiss universities of applied sciences?

How do institutional conditions (such as formal and informal dimensions) influence the entrepreneurial decision-making process of scientists? (Miranda, 2017,Hmieleski & Powell, 2018).

THEORETICAL BACKGROUND I

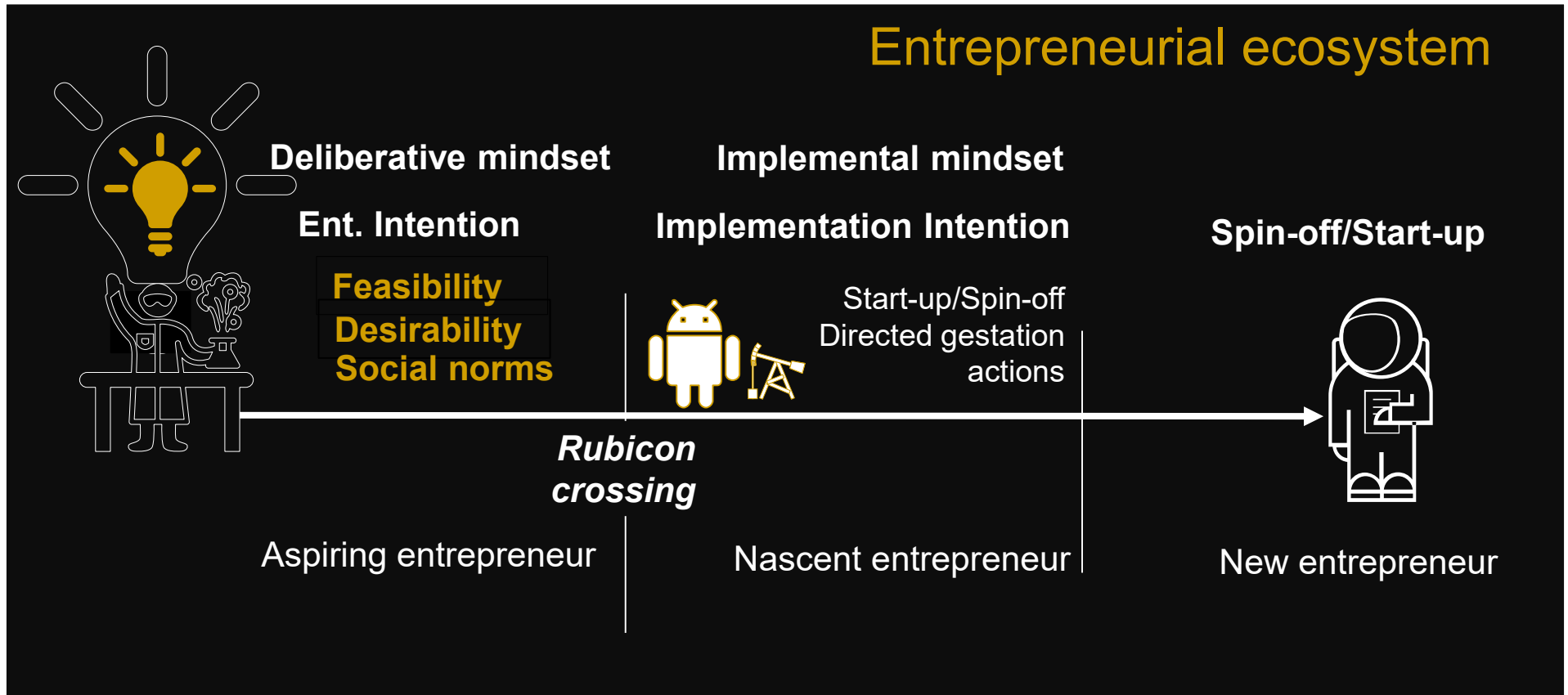
Individual founding process



A Rubicon Model of Entrepreneurial Action Phases. Adapted from Delanoë-Gueguen & Fayolle (2018), p.5

THEORETICAL BACKGROUND I

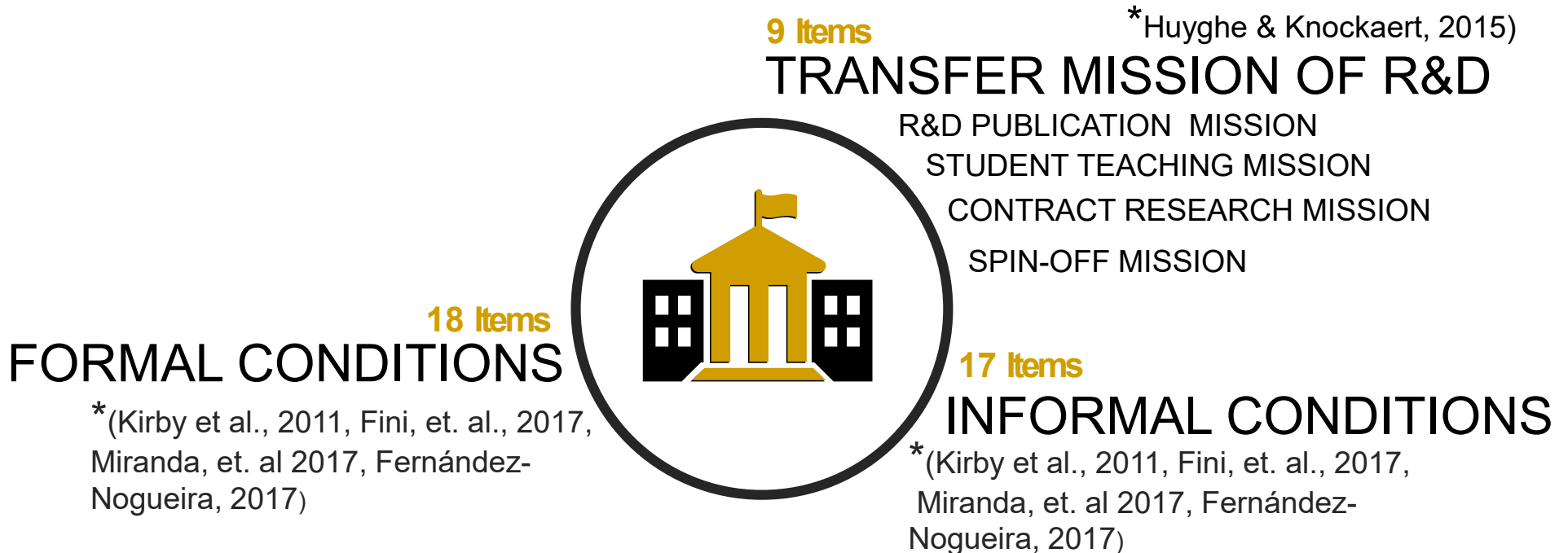
Individual founding process



A Rubicon Model of Entrepreneurial Action Phases. Adapted from Delanoë-Gueguen & Fayolle (2018), p.5

THEORETICAL BACKGROUND II

The Entrepreneurial University



Informal conditions (some examples)

- Superiors actively support spin-off projects
- Colleagues actively support spin-off projects
- My superiors are very keen to set up new companies
- My university gives good training to its teaching and research staff for them to develop their entrepreneurial potential
- Successful founders are well known and respected at the university

- In start-up/spin-off projects, the university promotes the compatibility of career and family
- A high level of expertise for spin-offs is available at the university
- Spin-offs/start-ups are a possible career option at the university
- The university informs about events and competitions concerning start-up/spin-off activities

Formal conditions (examples)

- When identifying business ideas
- When evaluating business ideas and concepts
- For mentoring and consultancy services for start-up/spin-off projects
- During the arrangement of foundation tenders/competitions
- For unpaid leave of absence for personal start-up/spin-off projects

- During financing in the business creation phase, e.g. “financing of prototypes”
- For team-building for co-founders
- For access to incubators and science parks
- For the development of a prototype
- For handing over industrial property rights (IP and licences) on favourable terms

METHOD



Online survey for scientists at Swiss universities of applied sciences from January to March 2019. (french, german, english)

- Demographic data (gender, personnel category, qualification, contract of employment, age, name of department/ university)



Entrepreneurial University

- Transfer mission of R&D (*SPIN-Mission, Contract-Research Mission*)
- Informal conditions, *17 Items*
- Formal conditions, *18 Items*
- Ent. role models, *3 Items*
- R&D transfer in 2018

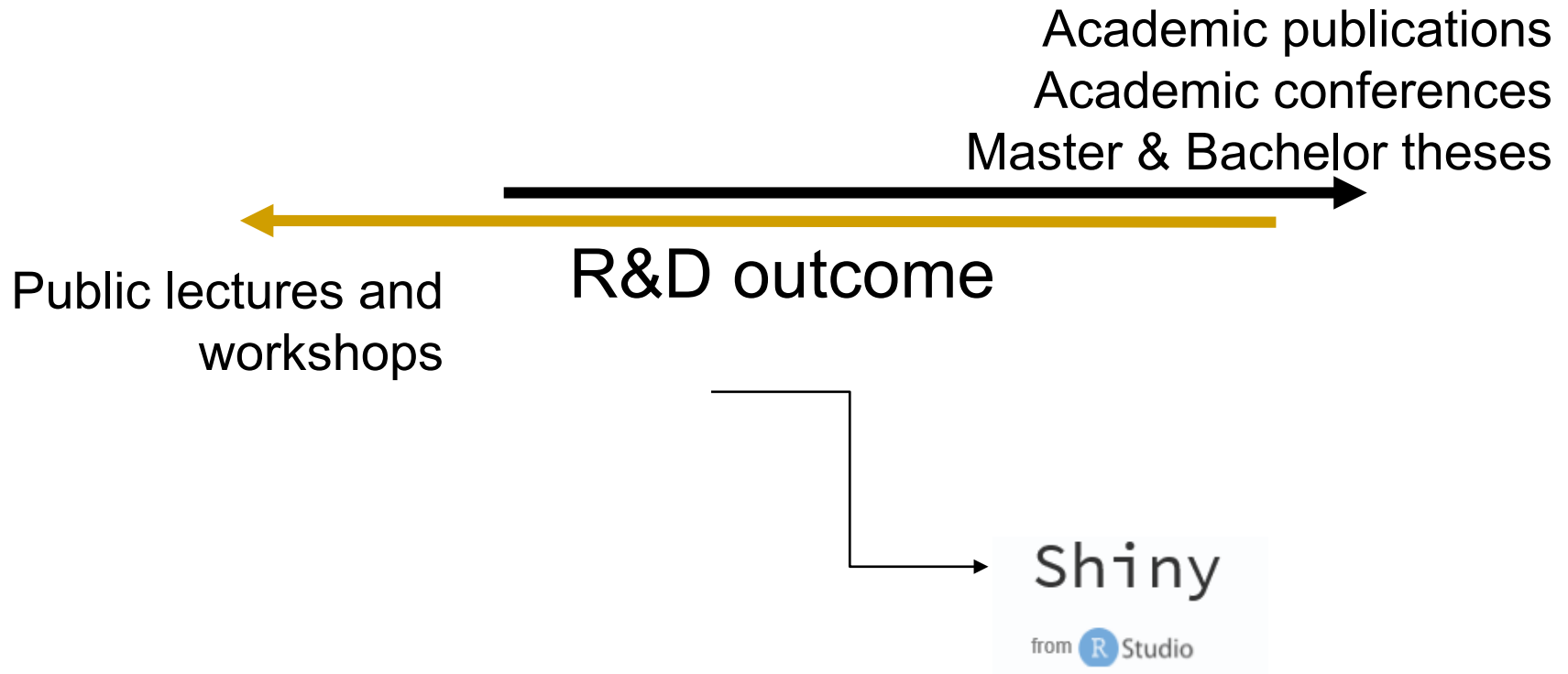


Theory of planned behavior (Ajzen, I. 1991)

- Entrepreneurial intention, *3 Items, ($\alpha = .87$), Mean inter-item-correlation=.69*
- Spin-off intentions, *3 Items, ($\alpha = .80$), Mean inter-item-correlation=.72*
- Entrepreneurial attitudes, *3 Items, ($\alpha = .90$), Mean inter-item-correlation=.76*
- Perceived behavioral control, *4 Items, ($\alpha = .88$), Mean inter-item-correlation=.70*
- Social norm, *3 Items, Mean inter-item-correlation=.63*
- Entrepreneurial self efficacy, *16 Items, McGee, et. al. (2009)*

RESULTS – How to increase the transparency of results?

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spof-map.ch (available in German language)



Data: Individuals who left missing data on certain items (gender, department/university, spin-off/start-up, formal and informal conditions) were filtered out of the underlying data set.

Total data set: n= 3'743 (Response rate (RR): 42.0%, n=8'905)

Filtered data set in spof-map.ch: n= 2'442 (corrected RR: 27.4%)

Security: The original data and Shiny run on the FHNW internal server and are protected by a firewall.



Visualization of descriptive data in Rstudio/ ggplot2,sjplot

- 1- General level
- 2- UAS level
- 3- Department level

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Thank you for your
attention!

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For further outcome see....

Morandi, P., Liebig, B. & Bläse R. (2019): Fachhochschulen als Start-Up-Schmieden? Voraussetzungen der Gründungsförderung in der Schweiz, in: *Zeitschrift für Hochschulentwicklung*, Jg.14 / Nr.2, 95 - 114.

<https://www.zfhe.at/index.php/zfhe/article/view/1206>

Liebig, B. & Schneider, N. (2019): To whom it may concern? Gründungsförderung und Gleichstellung an Schweizer Fachhochschulen. In: *Zeitschrift für Geschlecht, Kultur und Gesellschaft* (in print)

Morandi, P., Blaese, R. & Liebig, B. (2019): University Rent Doctrines in Transition. The Case of Switzerland. In: *Minerva. A Review of Science, Learning and Policy* (submitted)

Morandi, P., Blaese, R. & Liebig, B. (2019): Gründungserfahrungen und -potentiale an Schweizer Fachhochschulen. In: *Die Unternehmung: Swiss journal of business research and practice / Schweizerische Zeitschrift für betriebswirtschaftliche Forschung und Praxis* (submitted)

Schneider, N. & Liebig, B. (2019): Entrepreneurial Climate at Swiss Universities of Applied Sciences. A comparative perspective of science and humanities. *International Journal for Social Entrepreneurship* (submitted).

Bläse, R., Schneider, N. & Liebig (2019): Should I stay or should I go? Job satisfaction as moderating factor between perceived entrepreneurial utility and entrepreneurial intentions among scientists (submitted)

....and more to come 😊



**Thank you
& Good bye!**

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