

## Function performed and influence on innovative growth in Wuppertal

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### Research Question: "How do accelerators support the entrepreneurial ecosystem Wuppertal?"

#### Region and Relevance

- Relevance**
- Wuppertal seen as laggard due to high unemployment rate<sup>13</sup>
  - Wuppertal stands out as pioneer in R&D spending → basis for innovation<sup>15</sup>
  - Founding of ICT start ups is driven by renowned institute for start up and innovation research and Bergische Universität Wuppertal.<sup>16</sup>
  - Patent intensity in Wuppertal above average compared to NRW → indicator of innovative strength<sup>13</sup>

**City Wuppertal** (cultural hub of Bergisches Land)  
**Population** 362.174 citizens (2020)<sup>10</sup>  
**Population density** (per km<sup>2</sup>) 2152 (2019)<sup>11</sup>  
**GDP** 13.061 (in million €) (2016)<sup>12</sup>  
**GDP per working hour** € 56.0 per hour (2017)<sup>13</sup>  
**Economic Structure:** 33.5 % Manufacturing industry, 66,5 % services sector (2016)<sup>12</sup>  
**University:** 23.000 students (WS 19/20)<sup>14</sup>  
**Share of university graduates** 16,3 % (2018)<sup>13</sup>  
**Propensity of new start ups foundation** 21,6 business start ups per 10,000 inhabitants in Bergisches Städtedreieck (2018)  
**Commercial start ups with employees** 56.5% (NRW: 24.3%) (2018)  
**R&D of gross value added** 6 % (NRW: 1.4%) (2017)  
**Employees in R&D** 18.9 out of every 1,000 (2017)  
**Patent intensity** 139 applications per 100,000 employees (NRW: 79) (2016)  
**Unemployment rate** 8.0% (2019)

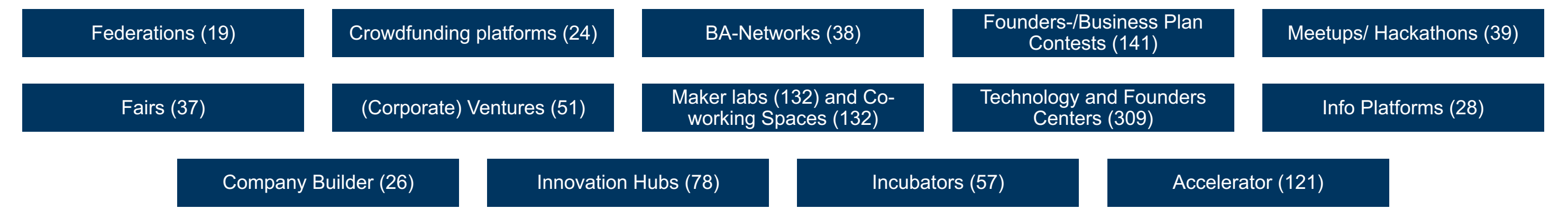


#### General support structures for start ups

##### Start ups as a booster for innovative growth of a region

- Entrepreneurs as „carriers of new ideas“<sup>21, 22</sup>
- Competitive pressure: Companies need to adjust and change their used resources to stay competitive on markets that continually change<sup>23</sup>
- New start ups lead to new competition and thus leads to enhanced productivity and performance<sup>24</sup>

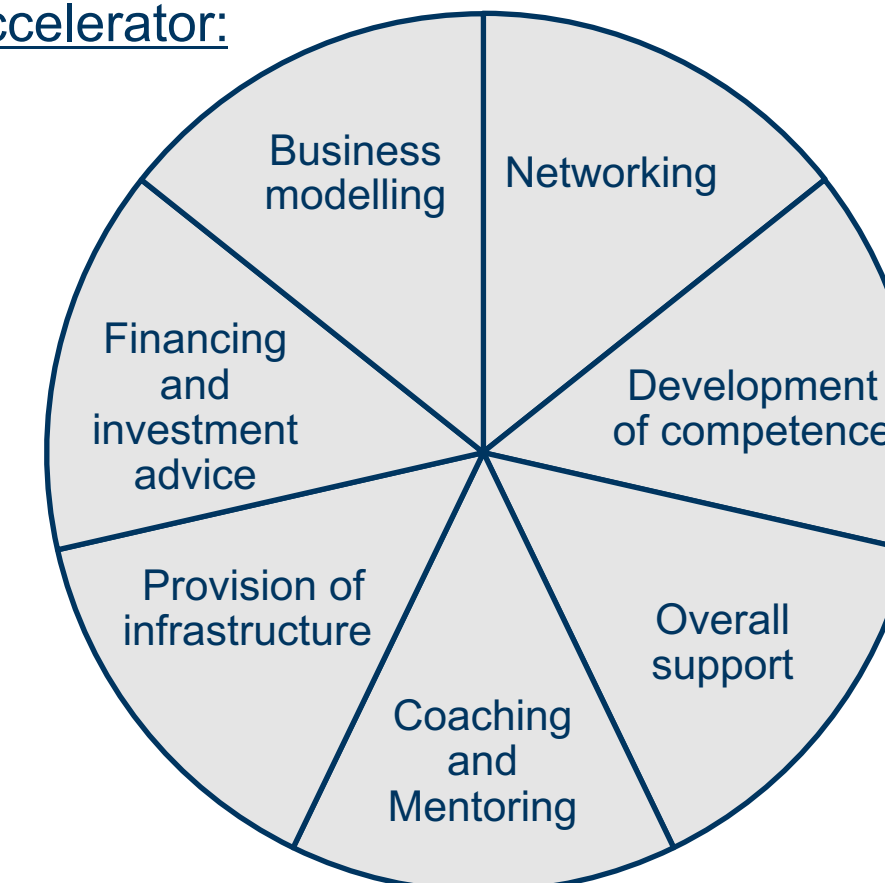
##### Start up support structures in Germany (and their quantity in Germany)<sup>27</sup>



##### Accelerator

- Speed up processes that would take much longer without them<sup>25</sup>
- Providing spaces to develop new ideas and practices, and individual professional identities<sup>26</sup>
- More than 80% of the accelerator in Germany are private companies<sup>27</sup>

##### Tasks of Accelerator:

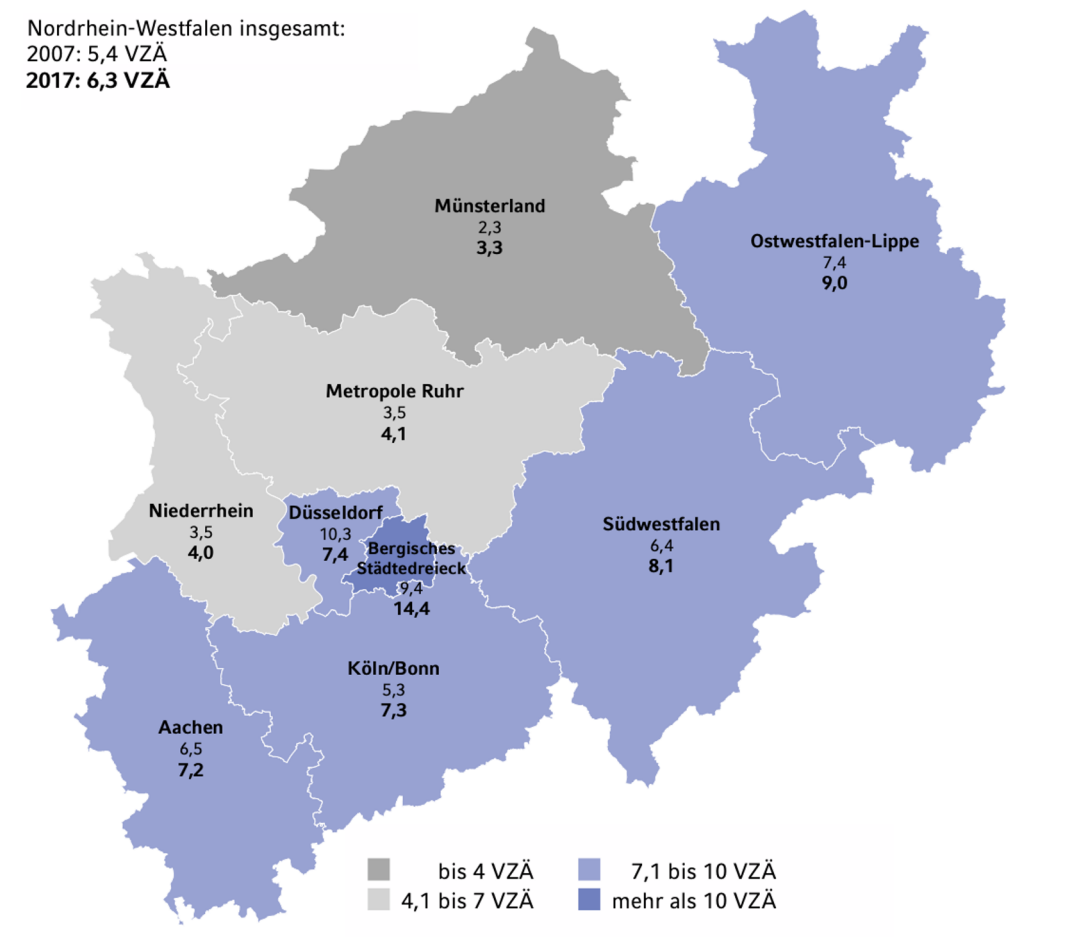


(source: Studie im Auftrag des Bundesministeriums für Wirtschaft und Energie (BMWi) | 2018)<sup>27</sup>

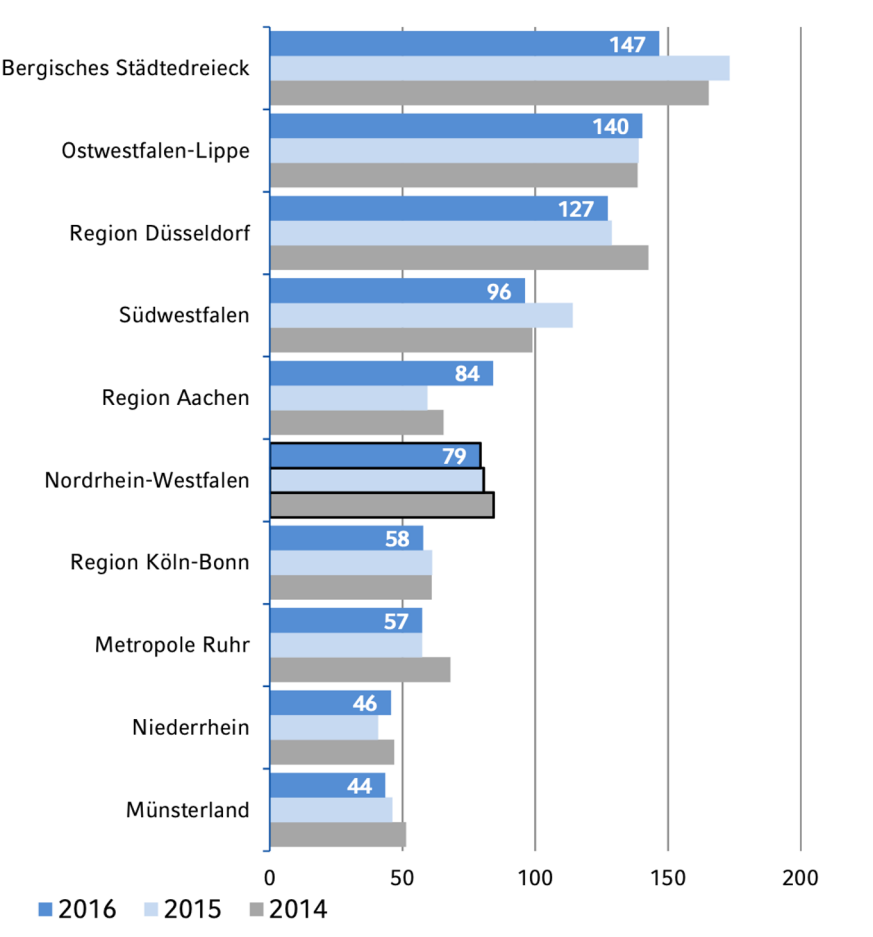
##### Difference between Accelerator and Incubator

	Accelerator	Incubator
Duration	3-6 months	1 to 5 years
Cohorts	Yes	No
Business Model	Investment, can also be non profit	Rent, non profit
Selection	Competitive, cyclical	Non-competitive
Venture Stage	Early	Early or late
Education	Seminars	Ad hoc, human resources or legal support
Mentorship	Intense, by self or others	Minimal, tactical
Venture Location	On-site	On-site

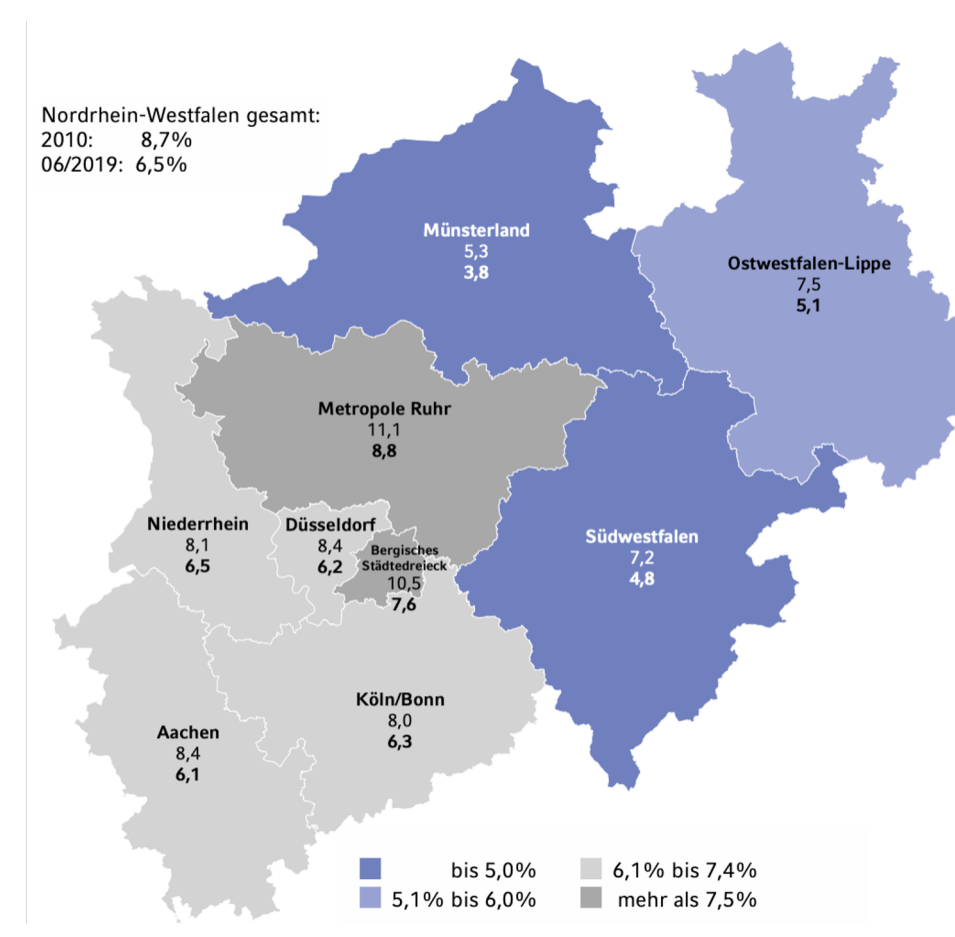
(source: Hathaway, 2016)<sup>28</sup>



Research and Development 2017 (source: Data: Stifterverband für die Deutsche Wissenschaft, Arbeitskreis, Volkswirtschaftliche Gesamtrechnungen der Länder)<sup>12</sup>



Patent applications 2016 (source: Data: Sonderauswertung IW-Patentdatenbank, Bundesagentur für Arbeit)<sup>12</sup>



Unemployment rate 2019 (source: Data: Bundesagentur für Arbeit, own calculations)<sup>12</sup>

#### Expert Quotes

"Having a "wise old rabbit" on your side is not so wrong (...) so you have someone to slow you down from time to time... The Accelerator was another voice that we can listen to, or not. Sometimes he just showed us what to focus on. Consulting was always about speaking. And when you start to speak, then things become clearer and you can see for yourself what mistakes you might be making... and if you have someone who has a certain amount of experience and can also give meaningful answers (...) that was the greatest value for us."  
*Pascal Kremp (Founder Pinetco, supported start up in Wuppertal, translated in English)<sup>32</sup>*

"I think all these programs are politically driven, Wuppertal just wants to look good wants to show that they support start ups. (...) I'm not satisfied with the output of these programs. They have to be developed away from theory and towards practice! All the plans you make for yourself won't happen anyway. The programs have to stop making it easy for people, but just encourage them to start selling!"  
*Pascal Kremp (Founder Pinetco, supported start up in Wuppertal, translated in English)<sup>32</sup>*

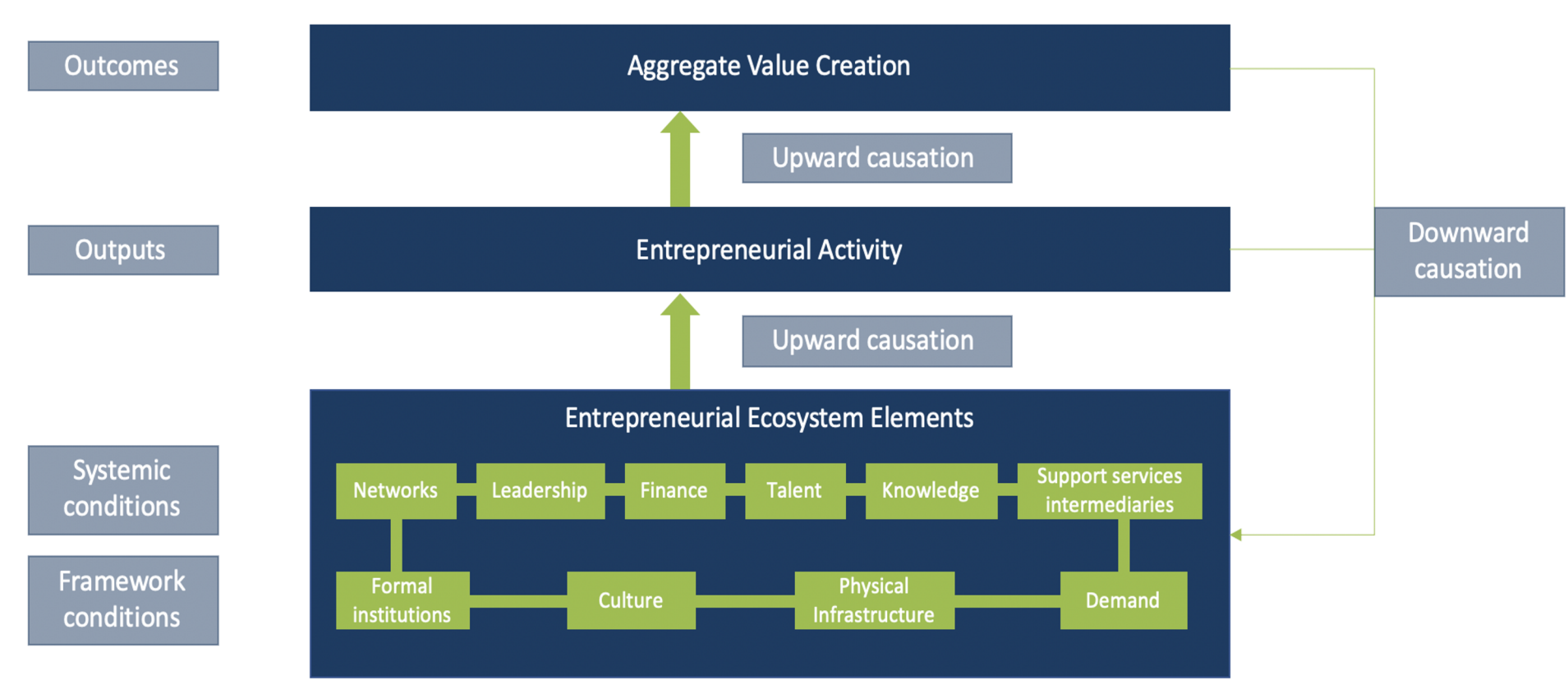
"The founders must remain in the driver's seat. No patronizing of the accelerator. The idea comes much more from the interaction between the team and the accelerator. They need to be motivated and think about their own decisions and not only pretend. (...) We listen a lot and encourage founders to think their own thoughts through to the end. On the other hand, we are knowledge mediators, because we use our questions and tips to make the founder aware of topics that they have not thought about on their own."  
*Marcus von Blomberg (Managing partner at Mello GmbH, private accelerator, translated in English)<sup>31</sup>*

"We have noticed that Wuppertal distinguishes itself positively by the fact that it very quickly forms new networks again and again and is in a position to offer start ups a reasonable network thanks to a deliberately loose but nevertheless trustworthy alliance. (...) So I believe that the connection to a region can be extremely promoted for start ups by such a network. (...) Well, I think the network is a key factor in developing a region permanently and sustainably."  
*Marcus von Blomberg (Managing partner at Mello GmbH, private accelerator, translated in English)<sup>31</sup>*

#### Theoretical Framework

##### Entrepreneurial Ecosystem (Stam, 2015):

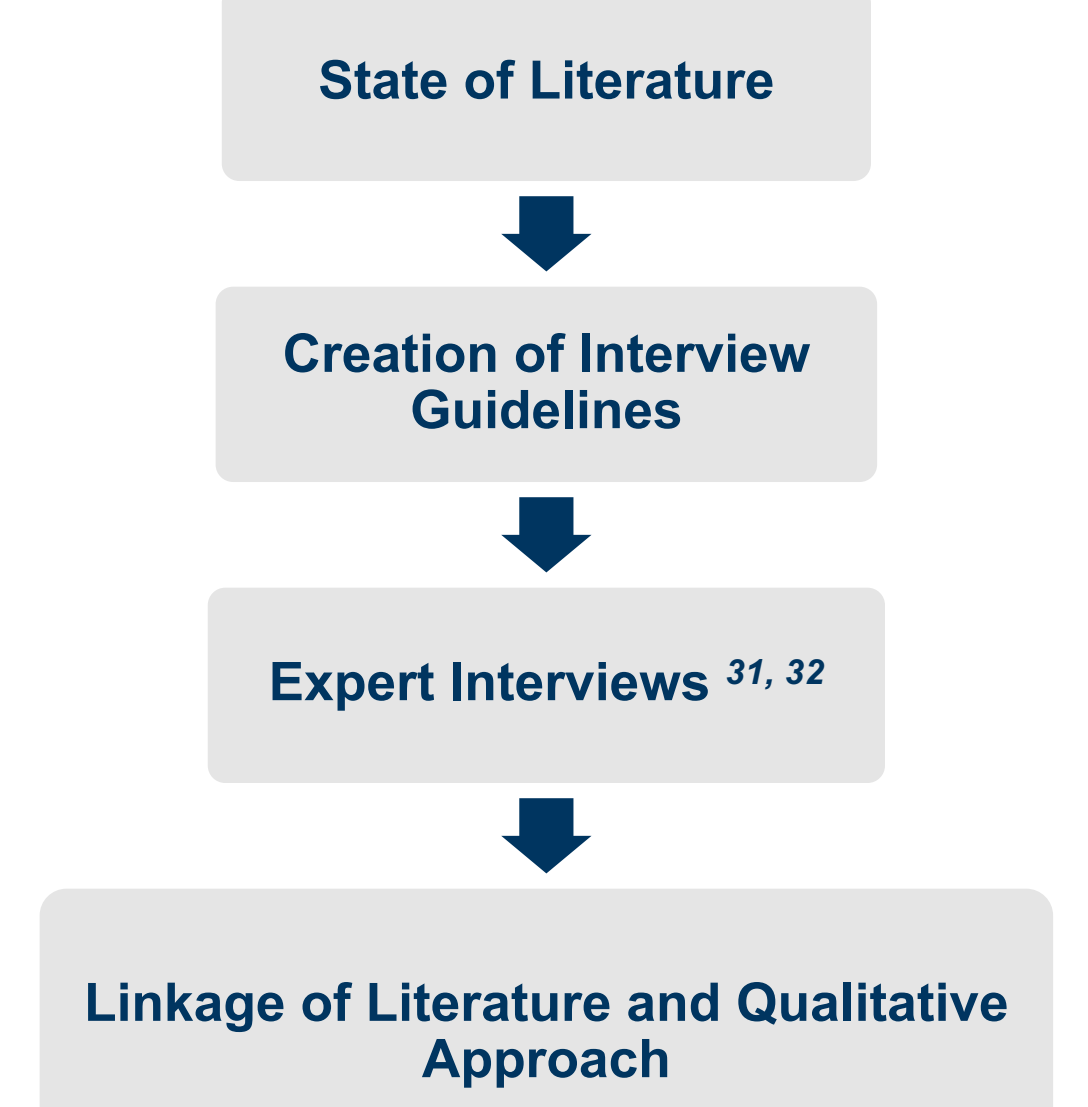
- the entrepreneurial ecosystem is a combination of interdependent actors and factors, interrelated to enable productive entrepreneurship<sup>40</sup>
- entrepreneurs play the leading role (heart of successful ecosystem) as mentors and advisors in creating, respectively, leading the system and keeping it healthy<sup>40</sup>
- Accelerators contain role as intermediaries within the ecosystem by providing support services and mentoring, advisory functions<sup>41</sup>



**Framework conditions** Form base of value creation within framework  
**Systemic conditions** Build center of ecosystem → interaction between them determines success of ecosystem  
**Outputs** Apply to entrepreneurial activity manifesting itself in many forms, such as innovative start-ups, high-growth start-ups and entrepreneurial workers<sup>42</sup>  
**Outcomes** Indication for value creation (productivity, income, employment and well-being)<sup>42</sup>  
**Upward causation** Essential factors of new value creation are mediated by intermediate causes<sup>40</sup>  
**Downward causation** Outcomes and outputs also flow back into the system conditions (virtuous circle)  
**Intra-layer causalities** Interaction of various elements within the ecosystem

"At best, they (accelerators) can be an agent that mobilizes and fills in the shortcomings of the existing ecosystems (...) they can provide networks (...) enable access to talent, for example in universities, they can also broadcast entrepreneurs and in that way change the culture in a region. They can play a lot of positive roles and improve the quality and interconnectedness of the elements"  
*(Stam, guest lecture, June 2020)*

#### Methodological Approach



#### Key Findings

##### Networks

- Providing access to their own network (scientific, public domain, investors, large corporates)<sup>61</sup>
- Accelerator contribute to start up infrastructure<sup>62</sup>

Provision of advanced network: Bergische University of Wuppertal, W-tec (biggest technology centre of Germany), economic development centre, Wuppertal Marketing, patent lawyers and banks, medium-sized companies → increase of attachment to region<sup>31, 66</sup>

##### Knowledge

- Usage of accelerators expertise (industry-related, network based or generalist)<sup>61</sup>
- Cohort programs encourage founders to interact with others: knowledge spill over<sup>25, 67</sup>

Encourage founder to rethink thoughts, provide input based on accelerators expertise and exchange with others → co-working spaces: Codeks, Schokoladen- und Denkfabrik, W-tec, Utopiastadt<sup>31, 32, 66</sup>

##### Talent:

- Entrepreneurship as a process of experimentation<sup>64</sup>
- Founding is more structured and less risky with support<sup>25</sup>

Using ideas and talent of young entrepreneurs: challenging talent • High patent intensity in Wuppertal compared to NRW<sup>13</sup> → indicator for high implementation of ideas and founding

##### Formal Institutions:

- Infrastructure for an innovation-driven start up economy includes R&D institutions and research universities providing talent (people) and knowledge (ideas)<sup>65</sup>
- Cooperation with the university as an additional think tank<sup>66</sup>

Higher R&D efforts in Wuppertal compared to NRW<sup>13</sup>  
 Additional research potential through chair of technology and innovation management at the university of Wuppertal and EXIST program<sup>14, 31</sup>

##### Culture

- Sharing of pooled equipment and facilities from the different start ups the accelerator support → miniature city<sup>25</sup>
- Establishing of norms, profitable behaviour and traditions<sup>63</sup>

Accelerator encourage start ups to interact and to participate at networking events to exchange<sup>32</sup>  
 → assuring local settlement of founded start ups<sup>31</sup>  
 → supported start ups attract young, educated and skilled workers to Wuppertal<sup>32, 66</sup>  
 → Positive word of mouth for accelerator<sup>31</sup>

##### Criticism:

"Not all accelerators are perfect organisations, they might have their flaws and are very much interested in surviving"  
 (Stam guest lecture, June 2020)

- Accelerators might act due to self interests (profit oriented) and not in interest of start up and/or region<sup>32</sup>
- Huge differences between different accelerators (private or governmental/ experienced or inexperienced)

- Accelerators act not as panacea alone for boosting entrepreneurial system
- Accelerator support short dated/non-durable: not sustainable for long lasting success of start ups?
- Critical view of Wuppertal being favourable for accelerator support → quality check of R&D expenditures and patent registrations

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