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Experiences students equip themselves with, enabling decision for entrepreneurial commitment: Identification and characterization of entrepreneurship related touchpoints in student customer journeys

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Abstract

Among the drivers of innovation and entrepreneurship in today's knowledge-based economy, the role of universities receives increased attention. Students are attributed a key role in this, as both their initiator and driver, however, its potential appear widely untapped. While literature grows fast on how to scale and manage entrepreneurship & innovation, qualitative studies on the experiences' students equip themselves with, leading up to the final decision to start a company in the first place, remain scarce. Hence, this thesis identifies experiences along academic journeys (till the point of their entrepreneurial commitment) influencing students' decision to start a business. From those identified experiences, characteristics and subsequently, a classification structure shall be derived. By the application of tools from domains of service design thinking (customer journey) and decision-making theory (theory of planned behavior (TPB)) a qualitative research design was developed to conduct in total 18 in-depth interviews including three different stakeholder groups (entrepreneurs, participants and organizers) within the entrepreneurial ecosystem of Graz University of Technology. Results include the identification of 113 experiences and the unsuccessful attempt to subsequently characterize as well as to classify them. Instead, a pivot towards another characterization attempt was undertaken using these identified experiences to serve as the basis for a prototyped tool called 'touchpoint contribution chart' (TCC). TCC aims to equip designers of the entrepreneurial university with a novel structure of the contribution on the decision on entrepreneurial commitment (based on TPB) of an identified experience.

Kurzfassung

Geht es darum Innovationen & Entrepreneurship in der heutigen wissensbasierten Wirtschaft voranzutreiben, rückt vor allem die Rolle der Universitäten immer stärker in den Fokus. Vor allem Studierenden wird dabei eine Schlüsselrolle als zugleich Initiatoren und Treiber zugeschrieben, dessen Potential aber als noch bei weitem nicht ausgeschöpft gilt. Während die Forschung im Bereich der Skalierbarkeit und Management von Innovation & Entrepreneurship stark wächst, sind qualitative Untersuchungen darüber welche Erfahrungen Studierende auf ihrem Weg konkret erleben und deren Beitrag zur Entscheidung ein Unternehmen zu gründen, kaum vorhanden. In dieser Masterthese werden jene Erfahrungen Studierender (entlang ihrer akademischen Reise) identifiziert, die zur Entscheidung beitragen ein Unternehmen zu gründen. Davon sollen im weiteren Schritt Charakteristiken sowie eine daraus folgende Klassifizierung abgeleitet werden. Durch die Anwendung von Methoden aus den Bereichen des Service Design Thinking (Customer Journey) und der Entscheidungspsychologie (Theory of planned behavior (TPB)) wurde ein qualitatives Forschungsdesign entwickelt und dabei 18 Tiefeninterviews innerhalb des unternehmerischen Ökosystems der Technischen Universität Graz durchgeführt. Die Ergebnisse beinhalten die Identifizierung von 113 Erfahrungen und der Charakterisierung auf Basis der identifizierten Erfahrungen die als Grundlage für die Entwicklung eines Werkzeugs (als Prototyp), dem Touchpoint Contribution Chart (TCC). Dieses Werkzeug (TCC) rüstet Designer der unternehmerischen Universität mit einer neu aufbereiteten Struktur einer identifizierten Erfahrung aus, die den Beitrag zur Gründungsentscheidung basierend auf der Theory of planned Behavior aufschlüsselt.

Table of Content

1 Introduction

Governments around the globe strive to maintain their country's prosperity while they regard innovation as a significant driver. A key factor to ensure innovation can be attributed to a country's strong ties to its academic institutions[1]. This is well exemplified by the United States, being home to world-leading innovation hubs such as Silicon Valley or Kendall Square, which are strongly intertwined with world-leading academic institutions[2] such as Stanford University or Massachusetts Institute of Technology (MIT).

Looking back at the history of innovation, we note that these ties have not always been that strong. They only have started strengthening by the first academic revolution, kicking off in the late 19th century[3], where academic institutions no longer only provided skilled labor to corporates but also incorporated research in their agenda as their second mission[4]. However, in the last decades, "a spectre is haunting the systems of innovation", which pathed the way for academia's third mission[5].

Have corporates traditionally been acting as the initiators of innovation and universities as the provider of skilled labor and research findings, a transition of these roles is taking place. The third mission can be expressed by the translation of research findings into economic development[6], initiated and led both by academic institutions. Differently put, university evolved from the assistant of innovation to its entrepreneur and hence, transforms towards an only recent crafted concept, named the "entrepreneurial university"[7].

This transformation is propelled by a global ongoing restructuring of the economy, indicated by the shift from an industrial towards a knowledge economy[8]. The relevance of traditional factors of production (e.g.: labor, ground and capital) recedes and shifts towards factors of knowledge or in the sphere of academic institutions: research findings[9]. Since the generation of knowledge through research is integral to academic institutions nowadays, their position as the entrepreneur in innovation strengthens naturally.

Another advantageous factor of universities is the proximity and eased access to a "skilled, independent, diverse and continuously inflowing stock of human resources in form of students"[10]. Whereas students can deliver on both roles, such as one of the

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[1] Cf. Etzkowitz (2003), p.294 ff; Graham (2014), p.1 f
[2] Cf. Etzkowitz (2013), p.497 f
[3] Jencks, Reisman (1968), p.110
[4] ibidem
[5] Etzkowitz (2008), p.1
[6] Cf. Leydesdorff (2000), p.110
[7] Cf. Klofsten et al (2005), p.115; Clark (1998), p.3 f
[8] Cf. Banse et al. (2000), p.60 f
[9] Cf. Cader (2008), p. 117
[10] Etzkowitz (2003). p.112

potential entrepreneurs and another that of manpower to execute innovative projects. Several other advantageous come with the natural resource of students and are elaborated further in this thesis.

The degree of transformation towards an entrepreneurial university, however, varies around the globe and its reasons are manifold. From a 2014 published study that analyzed universities highly regarded to become future world leaders (emerging leaders), following insights could be drawn from:[11]

- Individual starting position: Emerging leaders (e.g.: Technion in Israel, Aalto University in Finland, and Kaist in South Korea, etc.) are operating in different environments than those of world leaders (e.g.: MIT, Stanford University). These challenging environments are characterized by cultures that did not support entrepreneurship & innovation, by geographical isolation and by lack of venture capital[12].
- Individual path: The path they take towards becoming an entrepreneurial university is as individual as their starting positions are.

At first sight, it might appear obvious to orient ourselves, as an emerging leader towards the current world leaders and adopt their policies and measures. However, instead of that, the path taken by the emerging leaders appears rather individual. As individual as their starting positions are and their environments, they operate in.

In 2015, Graz University of Technology officially integrated 'entrepreneurial university' as an additional strategic focus[13] (while already offering entrepreneurship fostering services by the establishment of Science Park, an academic startup incubator, at least since 2003[14]). In 2016 it was incorporated in the latest agreement of performance (concluded with the Ministry of Science, Economy, and Research) to "establish an entrepreneurship fostering environment" and transform towards a "entrepreneurial university"[15].

Numerous different elements can be responsible for an entrepreneurship fostering environment at the university. These can include equipping students and staff with an entrepreneurial mindset, equipping them with capabilities to tackle entrepreneurial challenges till the development of their ideas through university-based incubators. The challenge set out is to understand which are screws that are to be twisted to yield most value for the creation of an entrepreneurship fostering environment. In the last years, one

[11] Cf. Graham (2014). p.1 f
[12] ibidem
[13] Graz, University of Technology, available online at https://pressearchiv.tugraz.at/pressemitteilungen/2015/29.09.2015.htm, request of 30th November 2020
[14] Science Park Graz, available online at https://www.sciencepark.at/about/, request of 30th November 2020
[15] N.N. (2015), p.23 f

screw, that received increased attention around the academic globe is known as Entrepreneurship Education (EE).

EE has increasingly been drawing the attention of designers of university curricula[16], since the number of universities offering courses on entrepreneurship high-jumped. In the past three decades, it rose from a handful of courses to more than 3000 institutions worldwide offering courses on entrepreneurship[17]. A new discipline has been forming since, with the aim to equip students and staff not only with a toolbox of hard- and soft-skills to tackle entrepreneurship related challenges but also to foster and grow their entrepreneurial mind[18].

The wake of EE's rise also rekindled an age-old debate around the question of whether or not can entrepreneurship be taught[19]. Rephrased, are entrepreneurs born or made? To what extend do external factors such as culture, social environment, education and upbringing influence? Or is there some kind of an entrepreneurial gene? Opinions among experts differ[20]. This thesis' stance on the debate can be best expressed by following quote of management thought Leader Peter Drucker: "It's not magic, it's not mysterious, and it has nothing to do with the genes. The entrepreneurial mystique? It's a discipline. And, like any discipline, it can be learned"[21].

EE consists of many domains and translated in practice the emphasis can highly differ from one university to another. Fayolle names two overarching emphases of EE: (i) producing start-ups; (ii) producing entrepreneurs[22]. The difference becomes clear when referring to his claim he published in the same article, where he calls upon universities to not only focus on turning into a "factory" of producing start-ups but rather producing future entrepreneurs. In other words, putting the human dimension in the front row, the entrepreneur, educated to be "capable of thinking, acting, making decisions, dealing with novelty, change, uncertainty and contingency", rather than focussing on a functional dimensions such as crafting business plans, accounting, legal, managing and scaling a start-up[23].

State of the art research fields within EE do respond to the above-mentioned appeal from Fayolle. For instance, the field of EE's impact on the entrepreneurial intent of students puts the human dimension in the center of research[24]. It identifies and evaluates

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[16] Cf. Kuratko (2005), p.577; Mars et al. (2009), p.72
[17] Cf. Morris et al. (2016), p.14
[18] Cf. Morris et al. (2016), p.17
[19] Cf. Henry et al. (2005), p.88 f
[20] Cf. Lüthje et al. (2003), p.143; Delay (2013), n.pag.
[21] Peter Drucker (1985), p.18
[22] Cf. Fayolle (2013), p.698
[23] ibidem
[24] Cf. Müller (2011), p.55 ff; Cf. Lorz (2011), p.1 f; Cf. Lüthje et al (2003), p.1 f; Cf. Guerrero et al. (2011), p.144 ff

characteristics of entrepreneurship-related lectures and their influence on the student's decision to start a company. However, qualitative research on the particular experiences contributing to students' intent committing to entrepreneurship in the first place, remain scarce.

Putting the human dimension in the center of research and development to create added value is already an integral practice by an increasing amount of companies among other industries[25]. This is achieved by various, already well commercialized, and partly well branded methods, such as Design Thinking[26], Jobs to be done Theory[27], Lean start-up[28], etc. In this thesis these methods allocated under the umbrella term of human-centered design[29] (HCD). What these methods share, shortly put, is the common goal of obtaining comprehensive understanding of human needs as the basis to design more effective solutions that eventually result in more desirable products and services. Traditionally, only applied to tangible products, it nowadays stretches over services till organizational processes while blending with other techniques from fields such as psychology or sociology.[30] Due to HCD's rising popularity and proven utility and applicability in more and more industries, it is interesting enough to learn what value can be yielded applying it in the field of EE respectively to help design the entrepreneurial university.

Indeed, a HCD tool named Customer Journey[31] (CJ) appears well tailored to the research area of EEs impact on the students' entrepreneurial intent. Simplified explained, the CJ analyzes the journey of experiences people have when interacting with a brand, product, or service and its influence on the decision to purchase. Thus, it claims that potential customers do not just suddenly appear from nowhere, make a purchase and disappear until they purchase again. They equip themselves with certain kind of experiences along the way which either promote or degrade the propensity to purchase again and remain a customer. Within the concept of CJ, these experiences of interaction are conceptualized as so-called touchpoints (TP).

Following distinct analogies between CJ and Entrepreneurship Education can be drawn:[32]

- Analogy to institutions of education: Students are seen as "customers" – The institution of higher education is seen as a "service organization"

[25] Cf. Harvard Business Review (2015), n.pag.; Brown (2009), n.pag.
[26] Cf. Brown (2009), n.pag.; IBM Design Thinking (N/S), available online at https://www.ibm.com/design/thinking/, request of 19th February 2019
[27] Cf. Ulwick (2016), n.pag.
[28] Cf. Ries (2011), n.pag.
[29] Cf. Giacomin (2012), p.606 ff
[30] Cf. Giacomin (2012), p.606 ff; Cf. Brown (2009), p.11
[31] Whittle/Foster (1989), p.30
[32] Cf. Fallast et al (2019), p.124 f

- Analogy to extracurricular activities: Outsourced elements within a service delivery providers process) compared with extracurricular activities.
- Planned customer experience journey: Deviation from the planned execution of the service respectively the actual journey perceived by the customer plays an important role in both domains.

When we conceive the influences on students' entrepreneurial intent as a journey of touchpoints stemming from any kind of interaction within an academic entrepreneurial ecosystem, and the product to be purchased as the decision to become an entrepreneur, we identify the CJ as a promising tool, to be applied for this thesis.

Hence, this thesis elaborates on the application of CJ to the area of EEs impact on students' entrepreneurial intent. In the following sub-chapter, we define the thesis' goals, non-goals and limit the scope of research.

1.1 Goals and scope of research

The thesis overarching goal is to understand the student's perception of touchpoints (TP) influencing their entrepreneurial intention. Each TP is determined by a point a customer gets in touch with a brand, product, service, or company. For instance, booking an accommodation for vacation involves a set of touchpoints such as recommendations of friends, the online references of former guests, the process of payment and so on. Therefore, in the first place, this thesis aims to identify entrepreneurship related TP. Following goals can be defined:

1.1.1 Goals

- Identification of entrepreneurship-related touchpoints
- Identification of characteristics of experiences connected to entrepreneurship related touchpoints
- Establishment of a framework to compare the effects from touchpoints influencing student's decision-making based on the Theory of planned behavior.

1.1.2 Non-Goals

- This thesis does not aim to establish and design a customer journey map. Rather, the method of CJ is applied to provide the base to identify touchpoints and to identify characteristics of experiences connected to these touchpoints. Therefore, neither a customer journey map nor new touchpoints are designed.

- The period of investigation does neither address touchpoints located in a pre-academic career nor post-graduation. It is limited by starting with the enrollment at university and ends with the day of graduation.
- This thesis does not aim to evaluate touchpoints quantitatively nor qualitatively, nor in terms of an ex-ante/ex-post approach.

1.1.3 Scope

- Place: Only touch points connected to Graz, University of Technology are considered. This involves touchpoints taking place at the campus or a cooperation by Graz, University of Technology is indicated.
- Time: The time span investigated of potential touchpoints occurring, starts from the day of enrolment. There is limitation of the time span as such, since entrepreneurs may already be graduated and left university, however, might have interacted with a touchpoint by e.g.: alumni newsletter.
- Who: The interviewees stem from three categories: entrepreneurs, participants of touchpoints and organizers of touchpoints.

1.1.4 Clarification on Perception of entrepreneurship as a career choice

To avoid misinterpretations of assumptions, this thesis might evoke in terms of the entrepreneurial intention of students, the following has to be clarified: This thesis does not suggest that every single student should strive to respectively is capable of to become an entrepreneur. Rather, the assumption is that not all students are given the same opportunities (quantitatively and qualitatively) to have entrepreneurship related experiences. This imbalance of experience exposure can lead to underinformed judgment, over the question of whether or not entrepreneurship is a preferable occupational choice. Therefore, this thesis' goals are based on the vision to provide as many students as possible an equal amount of opportunities (quantitatively and qualitatively) of entrepreneurial experiences and hence, enabling them to make a more informed judgement whether or not becoming an entrepreneur might be occupational choice.

2 Approach

In a first step, a review consisting of three bodies of literature has been carried out, involving the following fields:

- Entrepreneurship Education
- Customer Journey
- Decision making models

The relevance of the first two topics of literature review have been argued in the previous chapter 1 Introduction. The integration of the third topic, decision-making models, is reasoned as follows. Since we seek understanding on what fosters and hinders entrepreneurial intent and detail on the experiences respectively touchpoints, insights from the field of decision making models (i.e.: how decision are formed?; what are influential factors? etc.) appear undoubtedly to be relevant enabling to craft a strong research design. Further, main emphasis within the literature review is led on the customer journey, therefore its history, emerge, relevance today and application contexts are thoroughly shed light on.

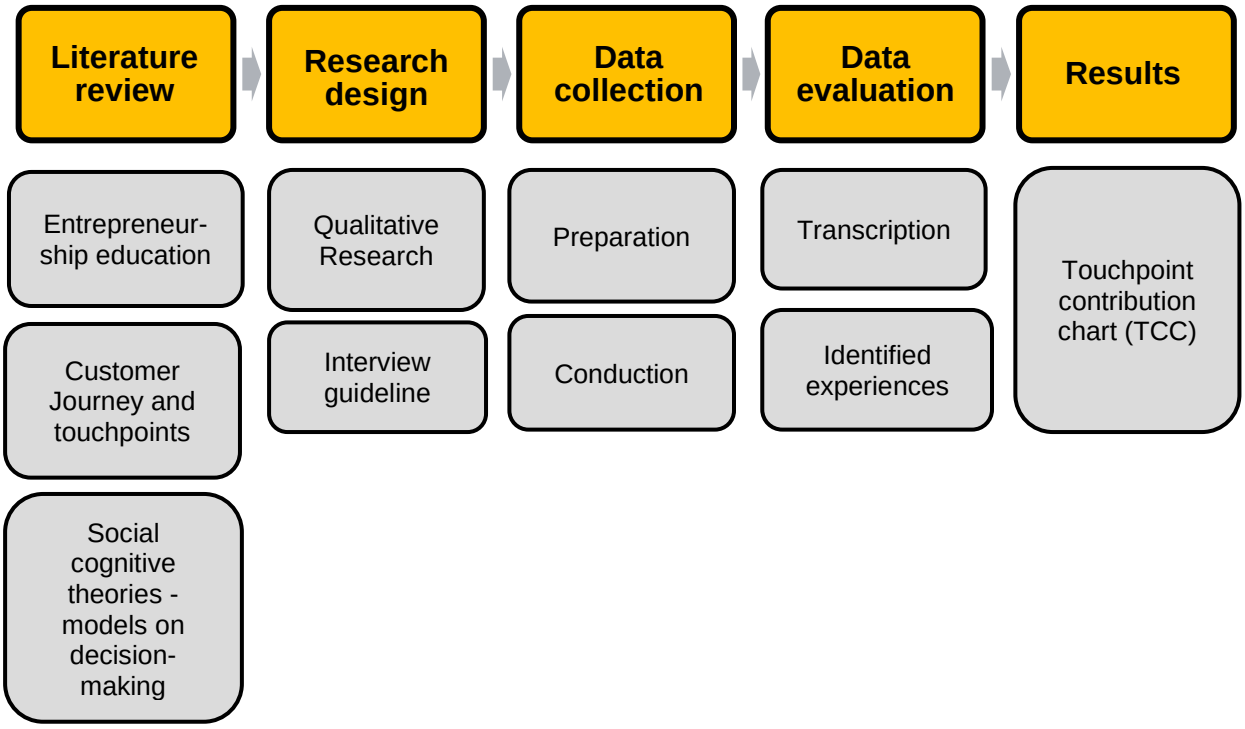
The stage of research design elaborates on the process towards the final design to collect research data. We detail on different forms of interviews, their applications and argue the final design specifications.

Subsequently, in the stage data collection, we detail on the interviews' preparation and conduction. Followed by the data evaluation we explain the process transcription and the usage of the qualitative data analysis software MAXQDA.

Finally, in the stage results we turn the gained insights from the previous stage into the tool named "touchpoint contribution chart" (TCC). This prototyped tool aims to help designers of the entrepreneurial university to create more student-centered experiences. Hence, we can conclude the set-up of the approach as follows (see also figure 1):

1. Literature review; 2. Research Design; 3. Data collection; 4. Data evaluation; 5. Results

Figure 1: The approach expands over five steps such as the literature review, research design, data collection, data evaluation and classification. The sub steps are listed below.



3 Customer Journey

From disease diagnosis and treatment in hospitals[33], over a coffee shop experience at Starbucks[34], till the handling of insurance incidents[35], it seems there are hardly major industries and service providers left, that did not apply the tool of customer journey. In this chapter, we elaborate on the reasons for its emerge, pin down the values it can deliver on and why it rose to this relevance today. Finally, we take a look on the design of experiences that is considered as a distinct discipline in future in context of customer journey.

Before we start, we need to specify our interpretations of it. Therefore, we confront some common definitions, see where it distinguishes from related concepts and identify a golden thread in which we derive some design principles.

3.1 Definition of customer journey

The concept of customer journey has by not far settled on a single definition. This circumstance can be seen as a positive circumstance, namely for a continuous dynamic within the field. According to Prof. Buchanan, “fields in which definition is a settled matter tend to be lethargic, dying, or dead, where inquiry no longer provides challenges to what is accepted as truth”[36]. Before we move on to the definitions, we want to clarify that the terms ‘customer journey’ (CJ) and a frequently occurring term in this context ‘customer journey map’ (CJM) are used interchangeably in this thesis.

Following definitions stem from globally renown organizations, companies, and scientists. They listed chronologically and in an ascending order, according to their date of appearance.

- In 2016, James Kalbach published a book titling “Mapping experiences” and elaborates thoroughly on the concept of the customer journey map. He refers to Bruce Temkin, one of the CJM’s early advocates (ca. mid-2000s), who expresses it as follows: “Documents that visually illustrate customers’ processes, needs, and perceptions throughout their relationships with a company.”[37]

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[33] Cf. Hall/Kunz/Davis/Dawson/Powers (2015), available online at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4468569/ request of 8th November 2018

[34] Little Springs design (2010), available online at https://www.id.iit.edu/models/starbucks-experience-map request of 8th November 2018
online reference

[35] Cf. McKinsey & Company (2018) available online at http://www.iii.org/insuranceindustryblog/the-digitized-customer-claims-journey-a-roadmap-to-success/ request of 8th November 2018

[36] Buchanan (2001), p.22 f

[37] Kalbach (2016), p.249 ff

- Prof. Birgit Mager, first to hold a professorship in the field of Service Design and current chairwoman of SDN (Service Design Network) defines it in the book "Designing services with innovative methods" as follows: "Consuming a service means also consuming an experience, a process that extends over time. The customer journey thus illustrates how the customer perceives and experiences the service interface along the time axis. It also considers the phases before and after actual interaction with the service. […]."[38]
- Tim Brown, CEO of one of the leading innovation consulting firms IDEO describes it in his 2009 published book "Change by design" as follows: "A simple scenario structure useful in the development of new services is the "customer journey." This structure charts the stages through which an imagined customer passes from the beginning of a service experience to the end. The starting point may be imaginary, or it may come directly from observations of people purchasing an airline ticket or deciding whether or not to install solar panels on a roof. In either case, the value of describing a customer journey is that it clarifies where the customer and the service or brand interact. […]."[39]
- Ragnhild Halvorsrud, researcher at the independent research agency SINTEF in Norway, describes it in her 2016 published article on "Improving Service Quality through Customer Journey Analysis" by the following: "[…], a customer journey is defined as a customer's interactions with one or more service providers to achieve a specific goal. It is often used as an intuitive metaphor for a customer's perspective of a service process. A customer journey is modeled as a sequence of consecutive touchpoints; in terms of duration, it can be short (hours) or long (weeks), depending on the service being investigated."[40]

All definitions share a strong emphasis on the aspect of the customer-centric view. To put yourself into the shoes of a customer and to perceive the value delivered from their perspective.

Before we further elaborate on Customer Journey Let us define the term touchpoints.

3.1.1 Definition of Touchpoints

Following two definition describe the concept of touch points:

[38] Koivisto (2009), p.15 f
[39] Brown (2009), p.54 f
[40] Halvorsrud (2016), p.25

- "A touchpoint is a point of interaction involving a specific human need in a specific time and place"[41] - Chris Risdon
- "The challenge with viewing touchpoints this way is this approach often assumes the customer has a) been in a linear and direct relationship with the organization and b) reads and engages with these touchpoints in meaningful ways. In short, an examination of touchpoints is often entirely company-focused (Sometimes, it is so company-focused the touchpoints are categorized by the org chard: marketing; operations; billing, etc.)."[42] - Jeanie Walters

3.1.1.1 Touchpoint characterization

Also, attempts to characterize touch points have been made. For example, Kalbach refers to "three primary historical types" of touch points, such as[43]:

- Static: The touchpoints do not allow for users to interact with them. They include things such as an email newsletter or an advertisement
- Interactive: Websites and apps are interactive touchpoints, as are online chats.
- Human: This type involves human-to-human interaction. Examples include a sales representative or a support agent on the phone

Schüller's (2016) characterization approach is to divide it into the customer's and the company's point of view and describes it as "clustering" touchpoints[44]:

- Point of view customer:
  - Influencing touchpoints – During the search for information since they channel the streams of decision.
  - Pre-purchase touchpoints – Play a crucial role prior to the final act of decision making to perform a purchase.
  - Purchase touchpoints: During the phase of the purchase decision
  - After-Purchase Touchpoints: In the phase of usage and resale everything needs run like a clockwork
  - Influencing Touchpoints: Own experiences are communicated in the form of word of mouth online as well as offline. This influences another potential customer.
- Point of view company:
  - Earned touchpoints: Results from good work such as references, news article, recommendations etc.

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[41] Risdon (2016), available online at https://articles.uie.com/un-sucking-the-touchpoint/ request of 13th September 2019
[42] Kalbach (2016), pp.28
[43] ibidem
[44] Schüller (2016), pp. 177 f

- Paid touchpoints: Paid by the company such as advertisements, Commercial TV Spots etc.
- Owned touch points: Such as websites, company blog, company magazine, online shop
- Managed touch points: With the use of a third-party provider such as Facebook, twitter, fairs etc.
- Shared touchpoints: Content about the company shared by the customer such as products, e-books, articles etc.

3.2 Examples of Customer Journey

Let us now look at a more tangible example and explain the basic concept briefly by two illustrations. This CJ in figure 2[45] shows a basic and rough structure of only stages and touchpoints. It stretches over five stages that are Awareness/Attention, Investigate/Consider, Choosing/Buy, Retention/Service, Retention/Loyalty accompanied by digital and analog touchpoints. Touchpoints indicate "a point of interaction involving a specific human need in a specific time and place"[46].

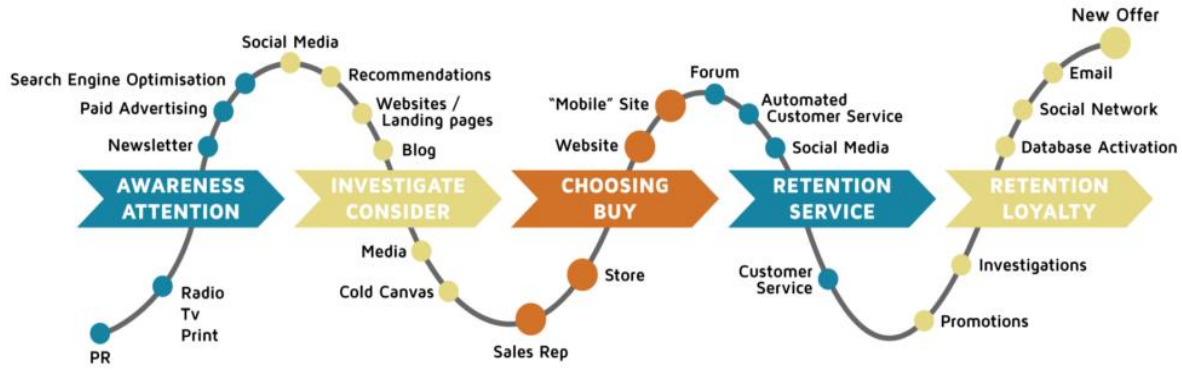

Figure 2: A customer journey designed in its basic form (only existing of the elements of stages and touchpoints) created by Rezolto

The Customer Journey shown in figure 3[47], depicts a more detailed illustration, dealing with the service of purchasing dancing lessons. Besides the elements of stages and touchpoints, it also sheds light on what customers are doing, thinking and feeling. The "thinking" category is even supported by a qualitative chart, informing to which degree the interaction was perceived positively or negatively. Further, it indicates touchpoints

[45] Rezolto, N.D, available online at https://rezolto.com/2018/03/21/customer-journey-mapping-video-guide/ request of 7th November 2018
[46] Kalbach (2016), p.28
[47] N.N. (N/S), n.pag., available online at https://www.ngdata.com/how-to-create-a-customer-journey-map/ request of 29th February 2019

that either causes an extraordinary great or bad (point-of-improvement) experience. Lastly the stages are broken down more in detail, therefore two more stages are shown.

Central to the concept is the stage of decision making. It’s the point when the purchase is executed. Further, also the loyalty actions after the decision making, which functions as an important influence, in other words, recommendations for customers located earlier in the journey.

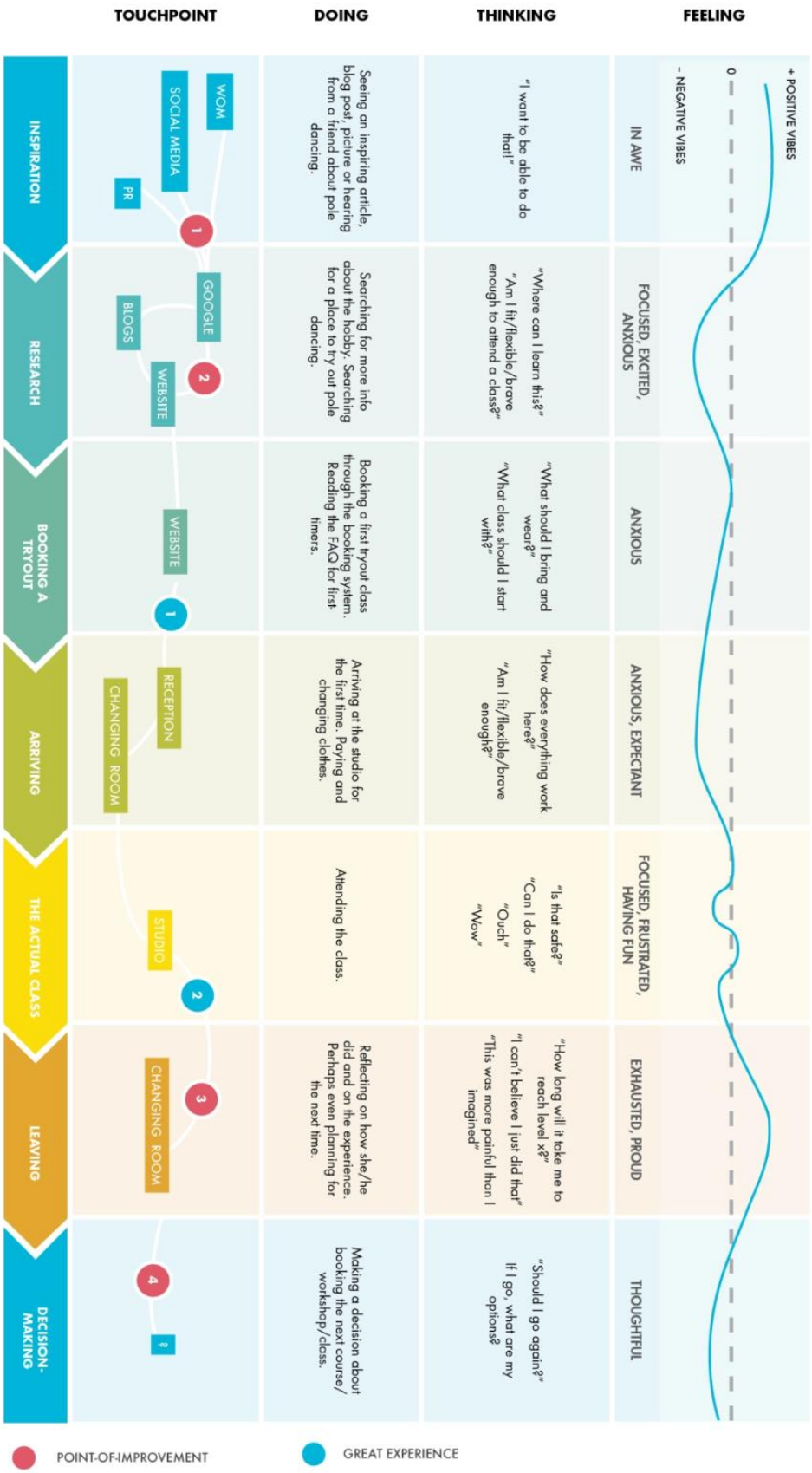

Figure 3: Customer journey illustrating the purchase of dancing lessons

3.3 Related concepts

To gain a holistic understanding of the concept of touchpoints appearing in various domains, different customer journey maps from different branches are presented. Plenty of concepts, consisting of terms such as ‘journey’ or ‘maps’, are around and often distinctions are not too clear, at first sight. In this thesis, these concepts are allocated under the umbrella term *journey maps*. We introduce only to some that at least come with one certain distinction regarding the value they can deliver, even if the borders towards the customer journey, might be blurry.

While effort rises to describe journey mapping of customers systematically and scientifically in general[48], there is hardly articles found to define and compare terminologies, structures and elements it consists of. Rather, so do practitioners worldwide that propel the establishment of different concepts in the field of journey mapping[49]. Hence, we refer our findings and interpretations of the value they can deliver by these practitioners. This is also a reason why we channel our effort to shed light on the value it can deliver instead of the elements, structures, and definitions. Let us figure out what they have in common and where they differ.

3.3.1 User Journey

While the customer journey encompasses the entire set of interactions with a company, product, service or brand, the concept of user journey suggests only to deal with a specific key task to reach a specific goal[50]. An example: Referring back to the illustrated CJ in figure x, the specific key task can be online research on their website to inform oneself on the lessons offered and to gain a good understanding on which to start with. When taking a look from the design branch of experience design and dealing with their concepts of CX (customer experience) and UX (user experience) we identify another approach to distinguish them. While UX suggests encompassing the interactions connected using a product or service, instead of only a specific key task, CX suggests, same as mentioned above, to involve the entire set of interactions connected to the company. Consulting firm KPMG explains this by the illustration in figure 4[51].

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[48] Cf. Halvorsrud/Folstad/Kvale (2014), p.417 ff
[49] ibidem
[50] Cf. Wilby (2017) available online at https://www.answerdigital.com/retail/customer-journey-vs-user-journey request of 15th November 2018
[51] Cf. KPMG (2017), available online at https://home.kpmg.com/nl/en/home/social/2017/07/the-difference-between-user-experience-ux-and-customer-experience-cx.html request of 17th November 2018

Figure 4: Illustration on the difference between Customer Experience (CX) and User Experience (UX) by KPMG.

What appears to be a common ground regarding the distinctions is the more limited scope of interactions in the concept User Journey, which is visually indicated by the size of the shapes in figure x.

Even though the definitions are not too rigid, it does not lose relevance gaining a good understanding of its distinctions when it comes to designing new products respectively services. This can be pinpointed on the goal to transform the user into a customer by the fact of buying for the service they use. Well demonstrated by the business model “freemium” which is, among others, used by music streaming platform Spotify[52]. Parts of the services are accessible free of charge. Access to the entire services requires a fee.

However, this transformation is not necessarily always the goal. Let us imagine a mother buys toys for her child. Since the mother pays, she indicates the customer. The child plays with the toys and indicates the user. In this context there is no interest in turning the child into a customer in the sense of the freemium business model.

[52] Cf. Deubener/Velamuri/Schneckenberg (2016), p.3

3.3.2 Service blueprint

The concept of service blueprint sheds lighter on the backstage processes and less on the ones on the frontstage, compared to the customer journey[53]. Backstage processes can be described as what is required to produce or to deliver a touchpoint. For example, in figure 5, illustrating the journey of a conference visitor, the touchpoint delivered can be the welcome email (marked in the green rectangle). The backstage processes required are: Create a marketing plan, blogging and twittering event, manage CMU (Communication management unit) event registration system. In this illustration, crafted by Brandon Schauer from design firm Adaptive Path, even divides the backstage processes by two levels namely back-of-stage interactions and support processes.

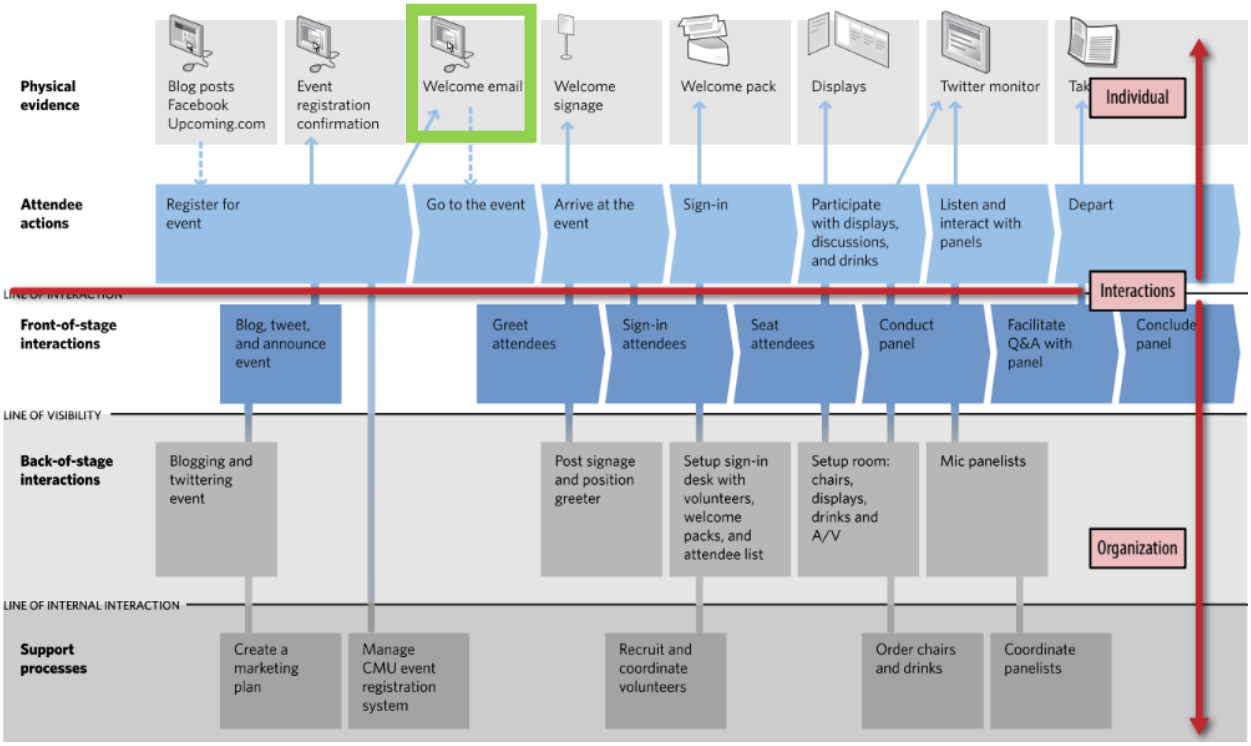


Figure 5: Service Blueprint by Brandon Schauer (Adaptive Path)

Service blueprint has the longest history of all journey maps[54]. This fact comes with only little surprise. In these early days, product development had a strong focus on the production and less on the effective perception respectively experience of value, as we learn in chapter 3.4 Emerge and todays relevance of Human-centered Design. The first, to scientifically describe the concept was Shostack in her 1982 published article on “How to design a service”. Shostack as follows: “A blueprint encourages creativity, pre-emptive problem solving, and controlled implementation. It can reduce the potential for failure and enhance management’s ability to think effectively about new services. The blueprint

[53] Cf. Kalbach (2016), p.95 f
[54] ibidem

principle helps cut down the time and inefficiency of random service development and gives a higher-level view of service management prerogatives." [55]

Kalbach further describes this efficiency can be reached by staying "lean". This term is used in a variety of ways but has one thing in common: Reducing waste". Pioneers of the lean movement, James Womack and Daniel Jones, suggest principles and the following four steps to approach it, presented in compromised manner:[56]

i) Specify the value. State what value you are creating from the customer's perspective. Define this in terms of the whole experience, not just individual interactions.
ii) Identify the value chain. [...]. In lean, the goal is to eliminate steps that do not add value.
iii) Optimize flow. Lean is about increasing the efficiency of production. This means optimizing the backstage service processes.
iv) Create a customer pull. […]. Start with the customer demand or need and align your offering to that.

Eventually, the main distinction to the customer journey is also undermined by the service blueprint's common attached criticism, that "they don't explicitly include information about the individual's emotional state"[57]. Rather it focuses on the backstage processes.

3.3.3 Experience Journey

After some desk research we learned that, even though the concept's name is interchangeably used with the concepts of customer and user journey, there are some few relevant distinctions to be drawn from.

Experience journey maps often illustrate interactions with a strong focus on the experiential and emotional aspects of the user[58]. However, not with the goal to transform the user into a customer. In fact, they are used by non-profit organizations such as hospitals, governmental services respectively services that do not center around the stage of decision making to purchase. Instead, there are other stages and areas of interest.

Here a few examples of experience journeys:

[55] Shostack (1982), p.54 f
[56] Kalbach (2016), p.231
[57] Kalbach (2016), p.237
[58] Kalbach (2016), p.274

3.3.3.1 Cancer experience map

A cancer experience map created by Healthwise is illustrated in figure 6[59]. The red rectangle indicates the category of “behavioral factors” supported by a qualitative chart on e.g.: To which degree the diagnosis was accepted by the patient? To gain an understanding of self-care. Further, each stage indicates so-called pain points. These pain points are touchpoints that cause a bad experience, i.e.: that reduces the propensity to move further on the journey e.g.: conflicting recommendations about treatment causes fears.

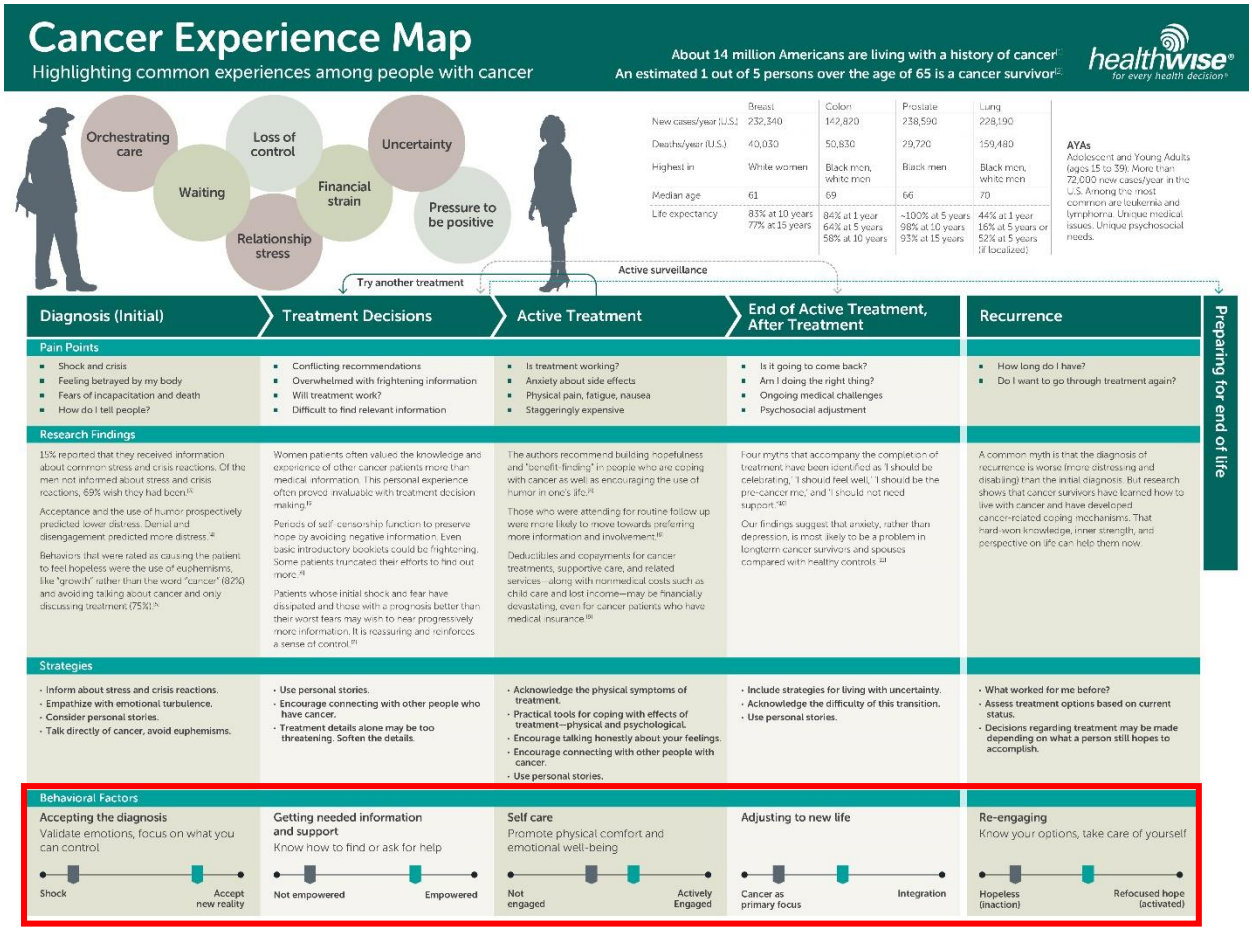


Figure 6: Cancer experience map created by Healthwise[60], an NGO (non-governmental organization) providing patient education for health insurances.

[59] Cf. Hall/Kunz/Davis/Dawson/Powers (2015), available online at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4468569/ request of 8th November 2018

[60] Healthwise (2018), available online at https://www.healthwise.org/about.aspx request of 23rd November 2018

3.3.3.2 Insurance claim journey

An insurance claim journey is illustrated in figure 7[61]. The part of the journey when insurance incidents happen has been redesigned by consulting firm Livework for a Norwegian insurance company called Gjensidige. One interesting redesign took place in the very first stage of the journey, see figure 7.

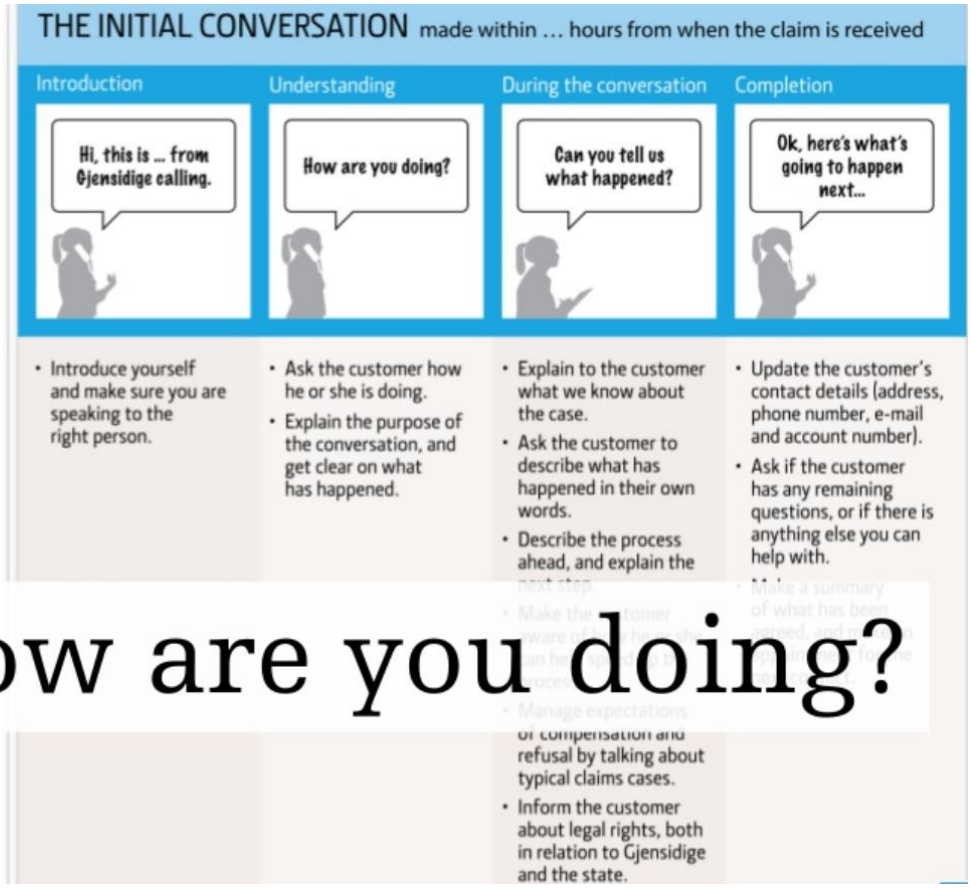


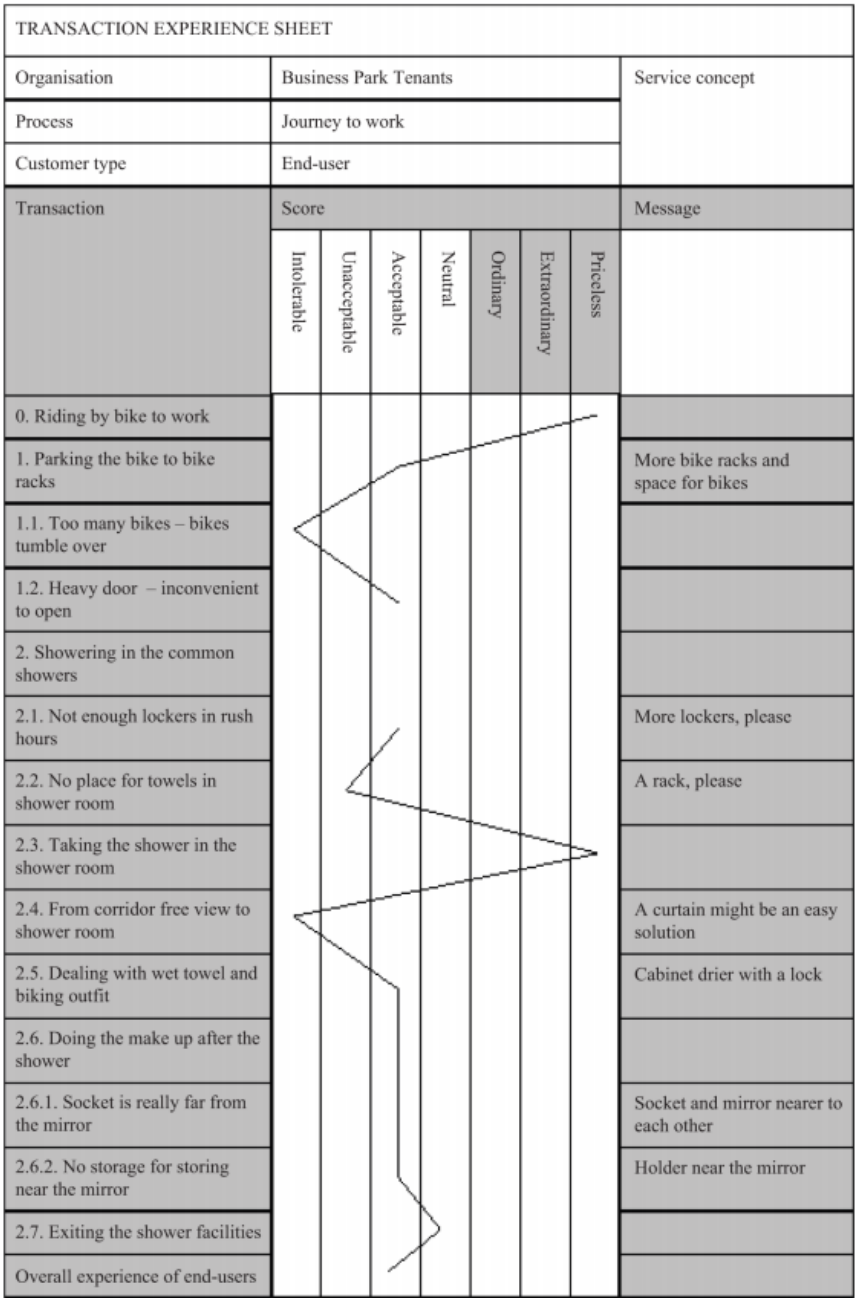
Figure 7: Conversation guideline respectively journey for designed for employees to deal with claims more effectively.

"By simply let them start talking", says Lavrans Løvlie (founding partner at Livework) and "not just asking right away for their customer insurance number they usually don't have at hand", the call resulted in a much more effective and calm conversation[62]. This in turn led not only in a better working atmosphere but eventually also to two sort of business impacts. Firstly, the call handling time of these claims decreased steadily as well the number of further calls needed and hence, reduced costs. And secondly it showed, the

[61] Livework, n.d., available online at https://www.slideshare.net/sdnetwork/sdgc14-day-one-7-a-nordic-model-of-service-design-by-lavrans-lvlie request of 24th November 2018
[62] Livework, n.d., available online at https://www.youtube.com/watch?v=-bgXBdxSOxY request of 24th November 2018

better treated and more satisfied customer were rather inclined to buy further products and services.[63].

3.3.3.1 Employee experience journey



TRANSACTION EXPERIENCE SHEET								
Organisation	Business Park Tenants							Service concept
Process	Journey to work							
Customer type	End-user							
Transaction	Score							Message
	Intolerable	Unacceptable	Acceptable	Neutral	Ordinary	Extraordinary	Priceless	
0. Riding by bike to work								
1. Parking the bike to bike racks								More bike racks and space for bikes
1.1. Too many bikes – bikes tumble over								
1.2. Heavy door – inconvenient to open								
2. Showering in the common showers								
2.1. Not enough lockers in rush hours								More lockers, please
2.2. No place for towels in shower room								A rack, please
2.3. Taking the shower in the shower room								
2.4. From corridor free view to shower room								A curtain might be an easy solution
2.5. Dealing with wet towel and biking outfit								Cabinet drier with a lock
2.6. Doing the make up after the shower								
2.6.1. Socket is really far from the mirror								Socket and mirror nearer to each other
2.6.2. No storage for storing near the mirror								Holder near the mirror
2.7. Exiting the shower facilities								
Overall experience of end-users								

Figure 8: “Transaction experience sheet” describing part of the journey of an employee to work.

[63] Service Design Global conference (2014) available online at https://www.liveworkstudio.com/blog/transforming-insurance-through-extreme-customer-orientation/ request of 24th November 2018

This map describes an employee's journey to work by bike, from the arrival at the business park to the shower taking to get ready for the work[64], see figure 8. Accompanied with a chart that indicates six levels (e.g.: priceless, extraordinary etc.) of how pleasurable the experience was perceived.

Even though it only investigates a small part in the entire journey of a working day, it delivers already many insights. When we view this experience journey from a customer's perspective that receives any kind of service by this employee in the journey, we identify the following distinction: In contrast to the two maps of cancer experience insurance incidents, this one would shift the focus entirely on backstage processes. Hence, this is comparable with the service blueprint. The difference, however, is the focus shift towards human aspects in backstage processes. While the concept of service blueprint describes backstage processes from a technical viewpoint respectively as tasks, this can be seen as a service blueprint only focusing on human factors.

3.3.3.2 Experience of safety by the public in the UK

Even though the report of this case does not explicitly use the term of experience journey (in fact it uses "user journey" and "service blue-print")[65], however due to the particular traits of this design challenge, it found its place in this category. In 2008, the British Crime Service Statistics reported an increased believe by the public that crime is rising[66]. This lack of confidence in the police existed even though the crime rates have fallen steadily over past ten years.[67]

[64] Cf. Marja Rasila/Rothe/Nenonen (2009), p.486 ff
[65] Cf. Drummond/Currie. (2011), p.236 ff
[66] ibidem
[67] ibidem

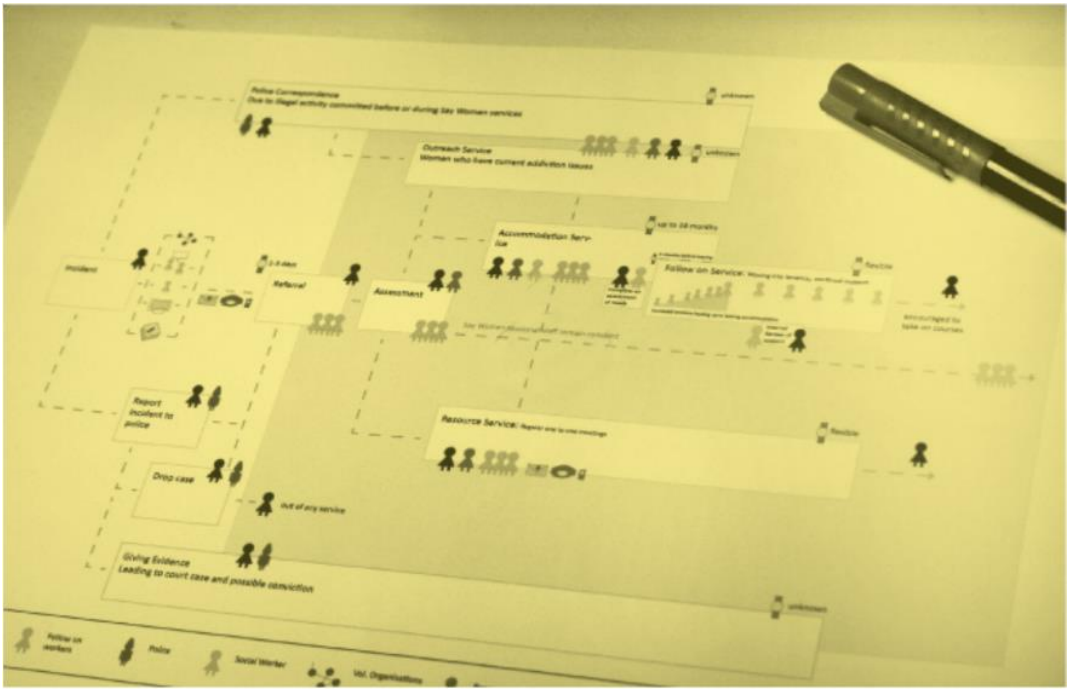


Figure 9: Stakeholder mapping through user journeys of a victim support service in Glasgow

By the help of consulting firm Snook, they identified touchpoints that caused the all-time low of trust in the police. However, beside the final solution they came with up, the various ways of involvement of the public and police in the design process, might contribute considerably in this case as well, see stakeholder map as one of the developed tools in figure 9. Stickdorn describes this as “evoking co-ownership” of the solution and hence result in “increased customer loyalty”[68].

As introduced in the beginning of experience maps, there is no interest in turning a user into a customer, hence the decision-making stage to purchase is neglected. This, in turn means, the goal is not primary to sell a product or service and to make money. The goals for the strong focus on the experiential and emotional aspects, can be described as follows:

- Equipping patients suffering from cancer with confidence and trust (cancer experience journey)
- Increasing workplace atmosphere (Employee experience journey in workplace, cancer experience journey, insurance claim journey)
- Public feeling of safety and trust in police (experience of safety by the public in the UK)
- Cost reduction (insurance claim journey, cancer experience journey)

[68] Stickdorn (2011), p.31

- Customer loyalty induces referral marketing of the product or service. Strong co-ownership of the service by users reached through co-creation in the design process (experience of safety by the public in the UK)

3.3.4 Mental Model

The mental model has a broad focus on the human experience[69]. The model, created in 2008 by Indi Young, is described as follows in Kalbach's book:

"The goal of design is to understand the mental model of the people you are designing for. […] The mental model the user has of the system is framed by that system. If you explore the mental model of a person, rather than a user, who is trying to achieve a purpose, then you can break out of the system frame. You can discover aspects of how a person thinks that have nothing to do with the system, but everything to do with how that person accomplishes their intent."[70]

This, in a first step, is done by combing the transcripts for relevant information to bring them in a standard format, see figure 10.

DIRECT QUOTE FROM RESEARCH	SUMMARIES
"When I get up, my body is just saying 'get some coffee!' It's like I can't function without it. So the first thing I do pretty much every morning is make coffee—it's almost automatic. I think I can almost do that in my sleep. I'll then enjoy a cup with breakfast or while reading the newspaper."	Feel nonfunctional until I get coffee
	Feel compelled to make coffee in the morning
	Enjoy a cup of coffee in the morning
"My wife and I both really like drinking coffee in the morning. It's a good way to wake up—it gets you going. Actually, I don't quite feel right until I've had my first cup."	Enjoy a cup of coffee in the morning
	Crave coffee in the morning
	Feel not-quite-right until after my first cup of coffee

Figure 10: Example of an raw research text (on the left side) and the derived format as summaries (on the right side)

These summaries are designed by the following three principles[71]:

1. Start with a verb, to focus on the thinking, rather than on the goal.
2. Use first person to put the researcher in the participant's shoes.
3. Add one idea per box, for simplicity and clarity.

These boxes (green rectangle) are then grouped into towers (in red rectangle) and in turn grouped into mental spaces (in blue rectangle), see figure 11. It illustrates a mental model of a car insurance incident process. This grouping helps to identify and form patterns,

[69] Cf. Kalbach (2016), p.6 ff
[70] Kalbach (2016), p.296
[71] Kalbach 2016 p.301

without expense of losing any single information which can cause an insight that could be relevant in a later stage of the observation.

Indeed, it is a very detailed and holistic approach that requires a high workload. The major distinction to the customer journey as such is the strong focus on the human factor through pattern making by two times grouping and the initial, very detailed derived “summaries” (see figure 10) extracted from the research text. This concept seems also to be compatible with other human-centered design concepts. In this case it was combined with the renown “Jobs-to-be-done (JTBD) Theory, on which we will elaborate on a later stage.

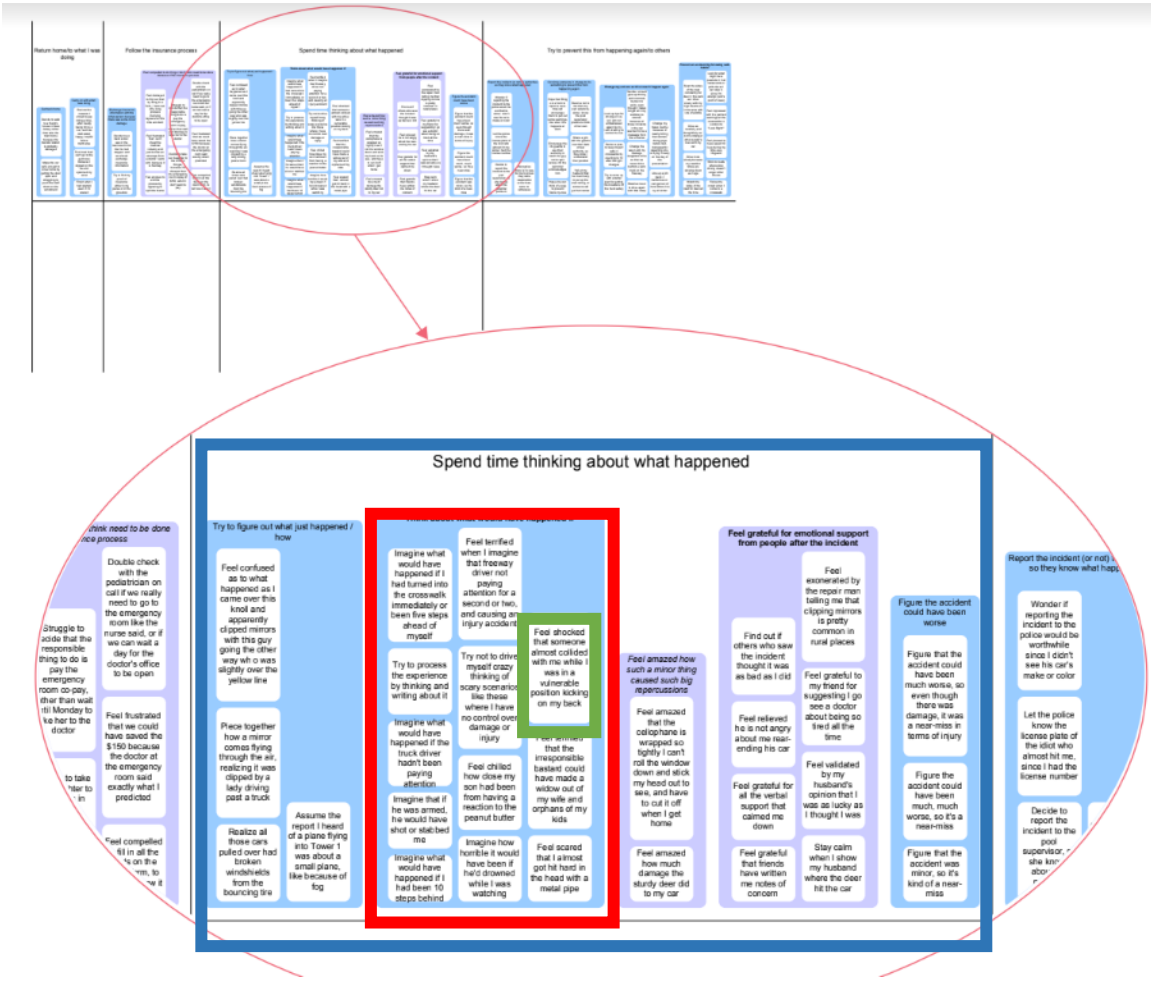


Figure 11: Illustration of a mental model of car an insurance incident process.

3.3.5 Gaps Model

The Gaps Model[72], is a conceptual model of service quality that indicates locations and reasons of deviations from service quality by five different gaps, see figure 12. The gaps are explained as follows:[73]

- Gap 1: Marketing Information: Extent to which managers make an effort to understand customers' needs and expectations through formal and informal information-gathering activities.
- Gap 2: Standards: Difference between management perceptions of customer expectations and service quality specifications
- Gap 3: Service Performance: Difference between service quality specifications and the service actually delivered.
- Gap 4: Difference between service delivery and what is communicated about the service to customers.
- Gap 5: Expectations: Difference between the service expected by the customer and delivered by the company.

This model is only to a limited extent comparable with the customer journey since it provides an overall understanding on possible location of deviations instead of real insights from customer. However, it provides a tangible illustration how to categorize different gaps that may occur while delivering a service. Gap 5 "Marketing Information" leads to tackle the right problem while i.e.: Gap 3 "Performance" tackles this problem right. In a later stage, sub-chapter 3.4 Emerge and todays relevance of Human-centered design, we will refer back to these types of gaps, to Drucker's quote and learn about its significance to human-centered design as such.

[72] Parasuraman/Zeithaml/Berry (1985), p. 41 ff
[73] ibidem; Parasuraman/Zeithaml/Berry (1991), p.337 f

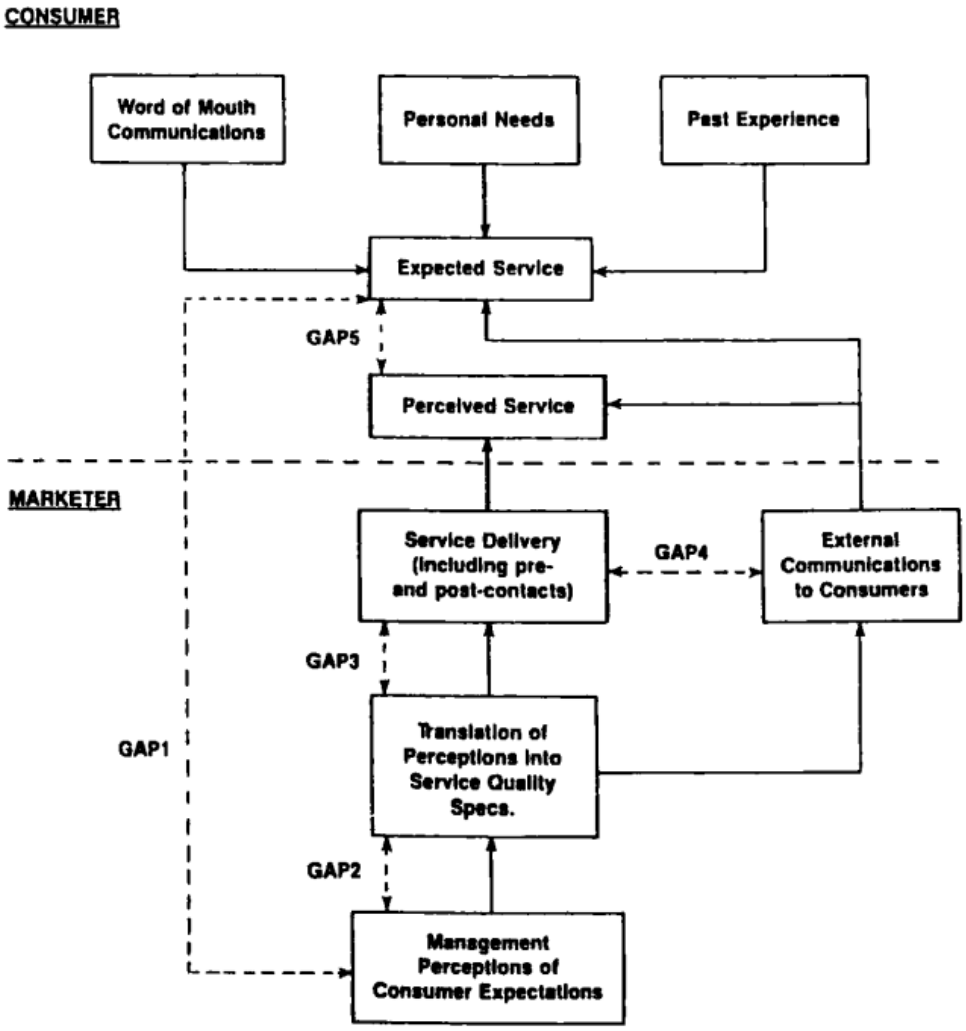


Figure 12: Gaps model

3.4 A golden thread – design principles

In this sub-chapter we boil down our learnings of the introduction to the customer journey itself and its related concepts:

- Goals over specific tools and labels: Define a direction, define a focus and a goal. Do not get hung up on labels, whether it is an experience map or user map — they are less important at the end of the day. Instead, focus on how you will show value alignment visually to engage others in your organization in a conversation[74]. "The objective is not just to create a diagram, but already to engage others in conversations and develop solutions together as a team"[75]. Hence, do not worry

[74] Cf. Kalbach (2016), p.95 f
[75] Cf. Kalbach (2016), p.81

whether it is the right tool, focus the goal you want to reach and the right tool and the way you apply it comes along.

- Apply concepts iteratively: Since there is a plethora of tools and concepts around, it provides a great opportunity to iterate to tackle the same challenge and goal.
- Mitigating reality gap on two levels: In a nutshell, all concepts introduced share a common idea. Mitigating the reality gab on two levels: i) Are you solving the right problems that matter to your customer? ii) And if so, is the solution to these problems perceived by the customer the way it was intended to?
- Aligning understanding by visualization: By visualizing the Customer Journey it provides the base for a common picture of the problem space. It also generates a common language and hence contributes to a common understanding. Whatever decision you make or problem you deal with, visualization helps a team to align, to arrive at the same page and arrive towards a common understanding.
- Simplifying vs. detailing: Too much simplification results in a loss of richness and full context of the actual human experience. On the other hand, too much detail can overwhelm. “There is always a struggle between detail and comprehensibility with diagrams”[76]. An example of a good compromise provides the mental model (see xxx) with its aim to cluster and derive patterns from all the insights gathered, while keeping a structured overview of its details.
- Adaption over time – “Customer journey is not a deliverable”[77]: A final learning can be identified as the dynamic usage of this tool. Since the perceived value delivered to the customers can change over time, a regular update on their perception is recommended. Or even can the challenge respectively the problem space change, which has been well expressed by the following quote: “Every time you feel you’ve got all the answers, they are changing the questions”[78]. Therefore, Customer Journey is not a one-time established deliverable but to be used, rather it is supposed to be complemented and adapted dynamically over time.

To understand the motives of the application, we need to elaborate on the history of design and in particular human-centered design. Let us shed some light on the early days of human-centered design, its emerge and value today.

[76] Kalbach (2016), p.322
[77] Stickdorn (2011), p.31
[78] KISD (2009), available online at https://issuu.com/touchpoint_journal/docs/touchpoint_1-1 request of 16th December 2018

3.5 Emerge and todays relevance of human-centered design

In this chapter we learn why the last two decades have brought an increasing amount of old and new businesses to rise and prosper, adopting human-centered design (HCD). We further introduce to the accompanied shift of value in competences and the formation of new competitive business advantages: From the skills of reducing costs of production, battling with competitors and to hone knowledge in one particular field, towards the skills of adapting to fast-changing market conditions, to be obsessed with customer needs and the skill to think out of the box.

3.5.1 System engineering approach

The roots of HCD can be traced back to the fields of ergonomics, computer science, and artificial intelligence[79]. The ISO definition from 2010 describes it as an “approach to systems design and development to make interactive systems more usable by focusing on the use of the system and applying human factors ergonomics and usability knowledge and techniques”[80]. This definition can be assessed as a “system engineering approach”, which aims to enhance characteristics of predetermined functions to "predetermined, technical problems”[81]. However, this “goal-directed focus fails to promote human interests” since the “consumer does not always adopt the point of view of a user”[82]. In other words, the overall job, respectively the problem to be solved for the user is already set and hardly questioned. Hence, the goal then is solely to design the usage, the way a user operates the predetermined functions, in a more usable manner and adjusted to humans.

Giacomin interprets this definition as some “echoes from the past” since nowadays HCD shifts towards a more holistic approach during the design process with a “tendency to focus on emotional engagement and so distances from the system engineering approach”[83]. It includes tasks relevant at the beginning of development processes rather than at the end when products already finished. Hence, it is focus shifted significantly.

3.5.2 Focus shift towards a holistic approach

In his book “Orchestrating human-centered design“ published in 2013, Boy formulates this new emphasis and expansion of tasks to HCD as follows: “HCD is not about human factors and ergonomics that are used when systems are already designed and

[79] Cf. Giacomin (2014), pp.608 ff
[80] ibidem
[81] ibidem
[82] ibidem
[83] Cf. Giacomin (2014), pp.608 ff

developed. […] HCD is about reinventing engineering and designing to a single discipline that integrates technology, organization, and people"[84].

This shift indicates a general movement taking place in the realm of design as such, which was visualized firstly by the Danish Design Center through the Danish ladder of design[85], published in 2007. See figure 14.

3.5.2.1 Evolution of design practice

This shift results in a new relationship between technology, business and design. While the relationships per se between them are not new, the level of their maturity is. The ladder, illustrated in figure 14, indicates, what Maguire in 2001 already noted as the "evolution of design practice"[86], the shift regarding the stage at which design is applied during the development process of an economic offering. We can observe, the higher design moves up the ladder, the more it shifts towards the beginning of the development process. In short, it can be summarized and asserted that management realized design's potential far beyond making things pretty, aesthetic and a little more usable to human[87]. Organizations that led the way through products and services by putting HCD in the center of their operations, are Alessi, Apple, Armani Facebook, Ferrari, Google, IKEA, Nokia, Phillips, and Virgin.[88]

[84] Boy (2013), pp.197
[85] Cf. Danish Design Center (2007), available online at https://danskdesigncenter.dk/en/design-ladder-four-steps-design-use request of 19th February 2019; Whicher/Raulik-Murphy/Cawood (2011), pp.48
[86] Cf. Maguire (2001), pp. 587 ff; Giacomin (2014), pp. 609 f
[87] Cf. Jon Kolko (2015), available online at https://hbr.org/2015/09/design-thinking-comes-of-age request of 16th February 2019
[88] Giacomin (2014), pp. 610 f

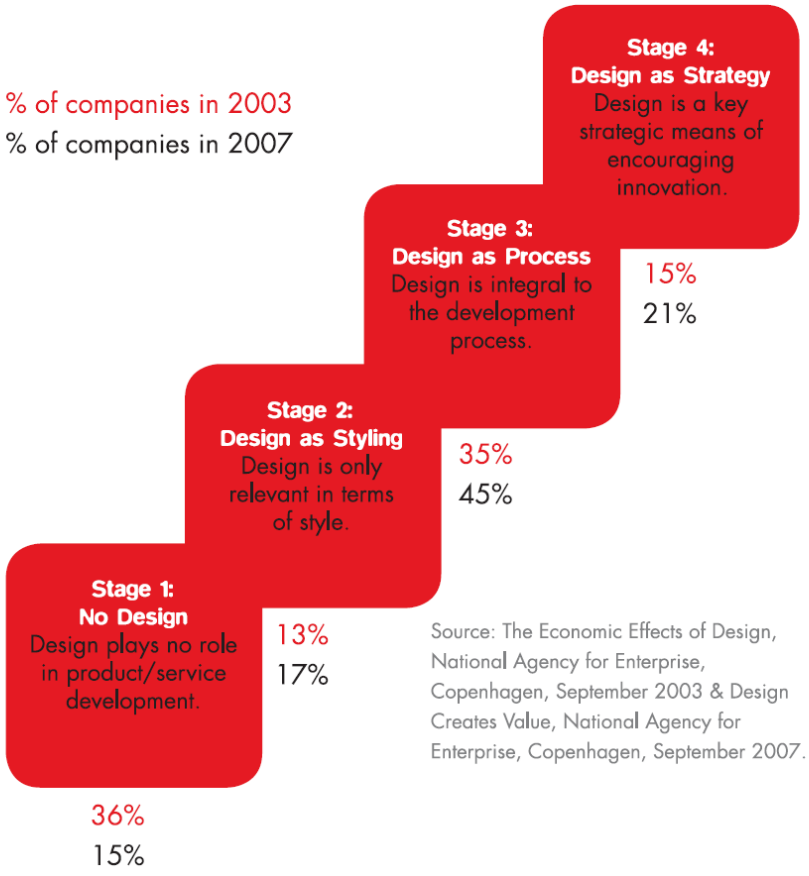


Figure 14: Danish ladder of design

3.5.3 A new paradigm

However, not only these companies realized the potential of design to create a new competitive advantage, but simultaneously, its necessity to survive too. A study from MIT Business school has noted that "70 % to 80 % of new product development that fails does so not for lack of advanced technology but because of a failure to understand users' needs. Empirical evidence from product failures supports the claim that human-centered design improves commercial success"[89]. Further, experts observe increased attention and adoption towards a new paradigm in management thinking respectively leadership that gained momentum around two decades ago[90], which helped pathing the way for HCD to rise.

[89] Cf. Giacomin (2014), pp.615 f; Hippel (2007), available online at https://hbr.org/2007/02/the-hbr-list-breakthrough-ideas-for-2007 request of 16th February 2019

[90] Martin (2009), pp. 79 ff; Jamali (2004), pp. 106 f; McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019

Therefore, we shed some light on this change in management thinking. Before we elaborate on the paradigm and its guiding principles, to what we refer as new respectively modern management thinking, we first seek understanding of those of the traditional one.

3.5.3.1 Traditional management thinking

This thesis conceives management thinking as such, as a set of guiding principles and underlying mind-sets, on how to prosper in business. Let us take a brief look at the history of the concept of Management.

Management as such, can surely traced back ever since humans exist. However, what we interpret and understand as the managerial practice of today, gained huge momentum by the inception of the industrial revolution[91]. As one of the pioneering contributors in this field might serve no other than Adam Smith by his landmark work 'The wealth of nations' when he commands for the division of labor to increase productivity[92]. Followed by David Ricardo's theory of comparative advantage, suggesting that, for instance: English workers were more efficient to produce cloth as much as Portugal's workers were to produce wine. By that he asserts that each economy was better off focusing on their own (inherent) area of advantage among the factors of production[93].

Since Adam Smith's pioneering act, it took some 100 years for the first business school to be found (Wharton Business school at University of Pennsylvania in 1881)[94]. This circumstance accelerated the accumulation knowledge and hence, the 'scientification' of management as a discipline began. To only name a few results: The Gantt-Chart was developed in 1910[95], Taylor published his principal work 'Scientific Management' in 1911 in which he a. o. suggests to replace the rule of thumb approaches by science (e.g.: time and motion observation)[96], and in 1916, Fayol emphasized with his work 'General and Industrial Management', on "discipline, centralization, order, control, hierarchy, and stability"[97]. Possibly no other metaphor as the 'organization as machine'[98] could draw a better image of the mechanistic oriented principles that dominated management thinking at that time.[99]

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[91] McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019
[92] Martin (2019), pp. 43 f; McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019
[93] Martin (2019), pp. 43 f
[94] McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019
[95] Wilson (2003), pp. 1-2
[96] Taylor (2006). N.p.
[97] Jamali (2004), pp.105 ff; Kreitner (2002), n.pag.; Robbins/Coulter (2003), n.pag.
[98] Morgan (1986), pp.11 ff
[99] Cf. Warwick Business School (2017)

In the mid-20th century, the number of management theories increased rapidly and started to borrow from fields such as psychology, sociology, statistics, mathematics, etc.[100]. Examples involve 'Theory of constraints', 'management by objectives', 'Six sigma' and the 'waterfall method' of software development.[101] While the focus on efficiency and predictability through the application of scientific models remained[102], unprecedented attention started to be drawn towards the value and potential of employees as well as customers in the emerging knowledge economy[103]. Its main proponent was Peter Drucker, one of the first management specialists to achieve guru status[104]. He challenged the prevailing control-command mindset between manager and worker and instead, proposed a. o. to foster 'self-management' of the, what he coined, "knowledge workers"[105]. Further views on the purpose of business and on value involved: "There is only one valid definition of business purpose: To create a customer"[106], and "[…] that the customer never buys what the supplier sells. What is value to the customer is always something quite different from what is value or quality to the supplier[107]".

Hence, central to him was the human factor, postulating "management is most and foremost about human beings"[108]. Drucker's views should only be glimmers of what was to come in the future of management thinking. However, evidence of the strong presence and approval of 'old' management thinking shortly before the turn of the millennium, can be indicated by the resonance of Michael Porter's views on how to reach a sustaining competitive advantage, delivered by his landmark works 'competitive strategy' and 'competitive advantage' published in 1980 respectively 1986[109]. His theories such as '5 forces' or 'value chain analysis' represent a strong focus on competition, efficiency and predictability while hardly including perceptions on what is later interpreted as modern

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[100] Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019

[101] Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019

[102] Cf. Jamali (2004), pp.106; Cf. Martin (2009), pp.33 ff

[103] Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019

[104] ibidem

[105] Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019; Drucker (1959) pp.122; Wartzman (2014), available online at http://www.harvardbusinessmanager.de/blogs/a-1000774.html request of 16th February 2019

[106] Drucker (1986), pp.64

[107] Drucker (1999), pp.29

[108] Schmid (2017) available online at https://www.trend.at/branchen/karrieren/peter-f-drucker-erfinder-managements-8429211 request of 16th February 2019; Drucker (1993), pp. 158

[109] Cf. Magretta (2011), p.4; Cf. Denning (2012) available online at https://www.forbes.com/sites/stevedenning/2012/11/20/what-killed-michael-porters-monitor-group-the-one-force-that-really-matters/#2845c693747b request of 16th February 2019; Cf. Kim/Mauborgne (2004), p.4

management thinking[110]. In short, organizations were better at operating, keeping that the status quo, than they were at innovating.

Summary of some guiding principles of traditional management thinking:

- High emphasis on efficiency (elimination of as much waste as possible in production that does not add value to the product)[111]
- Seek predictability of outcomes by using reliable models from science which requires analytical thinking (Scientific management, 6 Sigma, Total Quality Management)[112]
- Competition-oriented (in search of a sustainable competitive advantage)[113]
- Control-command mindset between manager and subordinate (hierarchical structures, discipline and centralized decision making)[114]
- Stability in operational processes[115]
- Incremental improvement on the product (launching sustaining innovation/technology in order to keep respectively increase margins, sold to the best customers) [116]
- The exploitation of markets (to find new market but with similar properties to sell their core products and hence to stick to the core competencies and core business)[117]

Let us now shed some light on what led to the change in management thinking.

3.5.3.2 Drivers of change in management thinking

The technological enhancement at the end of the old millennium (foremost by the advent of the internet) caused an unprecedented, accelerated change in socio-economic structure[118]. It significantly impacted and still impacts the domains of value production and value consumption simultaneously. On the one hand, the change in value production expressed as new form of utilization of (knowledge) workers in the new value chains, and

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[110] Cf. Kim/Mauborgne (2004), p.4; Mekic (2014), pp.1 ff; Cf. Denning (2012) available online at https://www.forbes.com/sites/stevedenning/2012/11/20/what-killed-michael-porters-monitor-group-the-one-force-that-really-matters/#2845c693747b request of 16th February 2019; Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019; Cf. Jamali (2004), pp.106 ff

[111] Jamali (2004), pp.105; McGrath (2013), pp.59 f; Martin (2009) pp.33 ff

[112] Martin (2009) pp.33 ff; Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019; Christensen (2009), pp.1 ff; McGrath (2013), pp.7

[113] Cf. Kim/Mauborgne (2004), p.4; Cf. Mekic (2014), pp.1 ff; Cf. Jamali (2004), pp.105

[114] Cf. Jamali (2004), pp.105

[115] Cf. McGrath (2013), pp.7 ff; Cf. Jamali (2004), pp.108

[116] Cf. Christensen (2009), pp.1 ff

[117] Cf. McGrath (2009), pp.248 f

[118] Cf. Jamali (2004), pp.106

on the other hand the change in value consumption expressed as more complex demands of better 'equipped' customers[119].

Addressing the domain of value production, a higher level of human knowledge and skills were demanded[120]. Further, "new attitudes towards work involve feelings of pride ownership and employees are becoming more concerned about merit, value, worth, meaning and fulfilment"[121].

3.5.3.3 Change in power-balance

Secondly, elaborating on the domain of the value consumption, customers "become more educated, more enlightened, more sophisticated, more inquisitive and critical – in sum more demanding when it comes to spending"[122]. To mention one: The advent of the internet in the early 90's enabled a plethora of applications to appear, providing unprecedented low barrier access to various kinds of value to the consumer. The result is a shift in the economic power-balance from industries towards the consumer[123]. Therefore, new products need to be "innovative, flexible for customization and of high quality while having a short life cycle in a fickle global market"[124].

Which in turn, requires (knowledge) workers, to be capable of producing these above mentioned innovative, creative and customized products and services to address the needs of the customers of the 21st century. Hence, deploying workers in the old-fashioned manner is an under-utilization of their potential and eventually economically unproductive as they fail to tackle these new requirements[125].

Therefore, this socio-economic restructuring required a different response from management since they can hardly be met with the mindsets and tools of the past. McGrath terms this response as the inception of management's third era: Empathy[126] (whereas the former two eras were execution and expertise). Empathy, from her point of view, is directed both to employees and customers alike. Traditional management thinking "worked well when markets, products, and technologies were slow to change"[127].

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[119] Cf. Jamali (2004), pp.106; Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019
[120] Jamali (2004), pp.106
[121] Jamali (2004), pp.106
[122] ibidem
[123] Carpenter (2013), pp.1 ff
[124] Jamali (2004), pp.106
[125] ibidem
[126] Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019
[127] Jamali (2004), pp.105; Turner/Keegan (1999), pp.296 ff

In the circumstance of stable markets and little competition being efficient is a noble and in fact, the right idea, hence, it made a lot of sense to stay competitive.[128]

We can conclude, the emphasis on innovation, the pressure to innovate to survive and prosper, has not been a necessity back then, to the degree it has today. Innovation centered around process innovation, to reduce cost and increase efficiency, instead of developing significant new values for customers.[129]

As competition increased, due to rising globalization of economy, scholars recommended to focus on efficiency and apply competition-oriented strategies and yielded huge response[130]. At the inception of the industrial revolution, once industries such as steel food and petroleum rose to a certain scale, a competitor in the same domestic market could hardly harm the incumbent[131]. McGrath puts it this way in her book 'End of competitive advantage' published in 2013: "The emphasis in strategy was, therefore, analytical because industries were assumed to be relatively stable, you could get a decent payoff by investing in analytical capabilities to spot industry trends and design your strategy accordingly. Those were the days of the five-year plan. A major assumption was that the world of five years from now was to some extent comprehensible today"[132].

Further, the notion of shrinking established markets, as described in the blue ocean strategy: "[…] supply exceeding demand in more industries, competing for a share of contracting markets, while necessary, will not be sufficient to sustain high performance"[133]. This required a new approach in management thinking and emphasis on the right type of innovation (the types are elaborated in the sub-chapter 3.4.3.4 Types of innovations. Otherwise, this would lead to, what Christensen described, as a "race-to-the-bottom phenomena"[134].

3.5.3.4 New management thinking

Roughly at the same time, when the socio-economic restructuring as described before, began to gain momentum, a concept termed 'new economy' appeared. The new economy describes a new order in the economy that emerged when foremost internet-

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[128] McGrath (2013), pp.7; Christensen (2009), pp.7
[129] Martin (2019), pp.43 f
[130] Magretta (2011), p.4; Cf. Denning (2012) available online at https://www.forbes.com/sites/stevedenning/2012/11/20/what-killed-michael-porters-monitor-group-the-one-force-that-really-matters/#2845c693747b request of 16th February 2019; Cf. Kim/Mauborgne (2004), p.4
[131] Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019
[132] McGrath (2013), pp.7
[133] Kim/Mauborgne (2004), p.4
[134] Cf. Christensen/Ojomo/Dillon (2019), pp.94

based applications found commercial use[135]. The implications are profound, since the value of conventional factors of production which dominated the so-called 'old economy' devalued and new ones appeared. Factors of production such as energy, raw materials, labor and capital started losing relevance compared to factors such as knowledge, creativity and adaption to new market conditions[136].

This also leads, what among others scholar Günter Faltin based at Freie Universität Berlin described, to a "democratization of innovation. It describes the appearance of a broader base of new protagonists that innovation[137]. Roger Martin, business thought leader, put it well when he shared some insights from his consulting experience during an interview at Talks at google in 2017: "The biggest complaint of fortune 500 CEOs is: I can't find organic growth and I am more worried about two kids in a garage who I don't even know exist yet, than I am about my biggest competitor across the street"[138]. Evidence on this is strong since the average residence time of companies remaining among fortune 500 dropped significantly and keeps on dropping. While in 1960 the average residence amounted for 55 years, it dropped down to 20 years in 2015.[139] From that point of view, one could claim it has never been easier to launch a new company and be successful. Hence, let us get an overview of the types of innovation and its new protagonists that drive it in the new economy.

3.5.3.5 Types of innovation

There are couple of criteria and approaches on how to classify innovation. In this thesis, we merely elaborate firstly on the approach of Harvard Business School Prof. Christensen and secondly of the 'Blue ocean shift' to draw a link to the role of HCD.

Christensen categorizes innovation depending on the growth and new value created:[140]

- Sustaining Innovation: Make good products better. It keeps margins high and markets competitive. However, they do not create growth from new consumption respectively new markets. Example: Toyota Prius (hybrid car) is a sustaining innovation compared to the Toyota Camry (conventionally driven). It gives the known customers a reason to buy a better version of the same product respectively no substantial change in value propositions.

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[135] Cf. TU Wien (2001), pp. 12 f
[136] ibidem
[137] Faltin (2015), pp. 108 ff; Cf. Tidd (2006), pp. 4 f
[138] Thinkers50 (2011), available online at https://thinkers50.com/biographies/roger-martin/ request of 20th February 2019
[139] Cf. Klement (2018), pp. 15 ff
[140] Cf. Christensen (2015), available online at https://www.forbes.com/sites/stevedenning/2015/12/02/fresh-insights-from-clayton-christensen-on-disruptive-innovation/#7e0a3d914702 request of 20th February 2019

- Efficiency Innovation: To do the same or more with less. An example is Wal-Mart: It made retail much more efficient (reducing number of employees) by keeping more or less the same value propositions.
- Disruptive Innovations: "Transform existing products that are complicated and expensive into things that are so much more affordable and accessible that many more people are able to buy and use. Therefore, you create new markets and hence growth. It is called disruptive, in the sense that competitors go out of business or lose market share because they are not prepared and used to respond to this type of innovation. For instance, Airbnb and the hotel industry.

A couple of years after Christensen's publication in 1999, another point of view was published by the award-winning book 'Blue Ocean strategy' in 2005 with the updated version in 2015 termed the 'Blue Ocean Shift'. The core idea argues, like Christensen, for the creation of new markets instead of engaging in the existing competition. This view involves two types, market-creating innovation (they call it value innovation) and sustaining innovations. However, they outline that not every value innovation must necessarily be disruptive to the competitor.

3.5.3.6 Technology and innovation

Since disruptive innovations usually create a new market that does not exist yet, it further supports the notion of the democratization of innovation, mentioned before. For several reasons: Potential disruptors would start, more or less, with as little knowledge on new markets and new customers as the incumbents would do and according to Christensen, they are even better suited for the endeavour.[141] Further, the role of technology and R&D, interpret Prof. Faltin and Prof. Texeira (Researcher on disruptive innovations) as an overestimated component for successful disruption[142]. Disruptors rather use existing technologies proven in other branches and products, but don't introduce a technological enhancement as such.[143] Airbnb, Facebook, Uber, Amazon, etc. are exemplified during an interview with Teixeira.[144] Knowledge of changing customer values and the relation to technology use is more significant to the success of disruptive respectively to market-creating innovation.[145] The limiting component is not technology but a working and

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[141] Cf. Christensen (2016), pp. 225 ff

[142] Faltin (2015), pp. 48 ff; Kost (2019), available online at https://hbswk.hbs.edu/item/what-s-really-disrupting-business-it-s-not-technology?cid=spmailing-25078499-WK+Newsletter+02-20-2019+%281%29-February+20%2C+2019 request of 22nd February 2019

[143] Kost (2019), available online at https://hbswk.hbs.edu/item/what-s-really-disrupting-business-it-s-not-technology?cid=spmailing-25078499-WK+Newsletter+02-20-2019+%281%29-February+20%2C+2019 request of 22nd February 2019

[144] ibidem

[145] Kost (2019), available online at https://hbswk.hbs.edu/item/what-s-really-disrupting-business-it-s-not-technology?cid=spmailing-25078499-WK+Newsletter+02-20-2019+%281%29-February+20%2C+2019 request of 22nd February 2019; Faltin (2015), pp. 48 ff

validated business model. Faltin further argues this by the notion of the so-called ‘European paradox’, which stands for relatively high output on R&D but a low rate on the translation into innovative products and services by European countries.[146]

3.5.3.7 Liquid expectations

In addition, disruptive innovation is hard to identify since it usually enters from a completely different branch. It seems it is not sufficient to know your customer’s needs and behavior using your product or service but also how they use other products and services from other industries. Accenture terms this notion ‘liquid expectations’ and explains: “Increasingly, your most important competitors are those we call perceptual: Those competing to shape the expectations customers have for experiences in every category. For example, Uber’s checkout, which is as simple and seamless as shutting the car door, will reset consumers’ expectations for how convenient checkout can be in every industry, causing consternation as they stand in a queue at a store or wait for a server to bring the check.”[147]

It seems, the barriers to entry the market for potential disruptors to challenge incumbents’ position, changed and keeps dismantling in the new economy. Hence, it should come as no surprise, when CEOs are more worried about unknown protagonists, such as “two kids in a garage”[148], than they are about their competitors. Already Schumpeter (in 1942) determined it as an “essential fact of capitalism” and that it “is a natural thing not something that is a mistake in the system” when new companies replace outdated ones by innovation. This notion he coined as the term “creative destruction”[149].

3.5.4 A new competitive advantage

To conclude, the paradigm shift in management put in a short manner, could be phrased as the understanding of the following: What made you successful as a company does not keep you successful. As Christensen claims, disruptive innovation comes usually with much more simplified, less featured and technology already used in other branches.[150] In short, “they need to find customers who value the very attributes that others consider

[146] Argyropoulou (2019), pp. 1 ff
[147] Shah/Greene (2015), available online at https://www.fjordnet.com/conversations/liquid-expectations/ request of 21st February 2019
[148] Thinkers50 (2011), available online at https://thinkers50.com/biographies/roger-martin/ request of 20th February 2019
[149] Schumpeter (1934), n.pag.
[150] Cf. Christensen (2016), pp. 231 ff

to be shortcomings"[151]. Or as Kolko described it as "exhibiting thoughtful constrains", in his article titled "Design Thinking comes of age"[152].

In short: Low in tech but rich in customer insights. One does not compete against the known competitor but against non-consumption.[153] This inherently requires methods to develop a comprehensive in-depth knowledge on potential customer segments one is unfamiliar with. Since the markets which these customers are supposed to form are not even known or extant yet.

Hence guiding principles of new management can be boiled down to the following:

- Create new value propositions and new markets: Looking at types of innovation beyond the goal of efficiency and incremental improvements. Instead, create new value for customers that are unknown and market that does not exist yet. Abandon competition-oriented strategies).[154]
- Abandon 'carrots and sticks' approach: Instead, motivate employees intrinsically, otherwise under-utilization of employee's potential.[155]
- Empathy: Both when it comes to producing new values and creating new markets as well as motivating employees intrinsically. It requires insights on the interests, needs, hopes, fears of customers and knowledge workers.[156]
- Abductive thinking: "A concept originated by turn-of-the-twentieth-century philosopher Charles Sanders Peirce. His important insight was that it is not possible to prove any new thought, concept, or idea in advance*:* all new ideas can be validated only through the unfolding of future events. To advance knowledge, we must turn away from our standard definitions of proof—and from the false certainty of the past—and instead, stare into a mystery to ask what could be. The answer, Peirce said, would come through making a "logical leap of the mind" or an "inference to the best explanation") Hence, the best strategy involves a good mixture of analytic thinking (predicting reliable outcomes) and intuitive thinking (to reach validity of outcomes in the future.[157] More details on abductive thinking to be found in chapter 3.4.5.1 Abductive thinking; and 6.4.1 Integration of abductive reasoning

[151] Christensen (2016), pp. 231 ff
[152] Kolko (2015), available online at https://hbr.org/2015/09/design-thinking-comes-of-age request of 21st February.
[153] Cf. Kolko (2015), available online at https://hbr.org/2015/09/design-thinking-comes-of-age request of 21st February.
[154] Cf. Kim/Mauborgne (2004), p.4; Cf. Christensen (2009), pp.1 ff; Cf. Drucker (1999), pp.29
[155] Cf. Ton (2017), available online at https://goodjobsinstitute.org/what-is-the-good-jobs-strategy/ request of 16th February; Cf. Jamali (2004), pp.106 ff
[156] Cf. McGrath (2014) available online at https://hbr.org/2014/07/managements-three-eras-a-brief-history request of 16th February 2019; Cf. Drucker (1999), pp.29
[157] Martin (2009), pp.1 ff

These guiding principles of new management thinking are allegedly best cast into a tangible methodology, by what we know today as Design Thinking (DT). At the turn of the millennium, Design Thinking's worldwide recognition gained momentum in the first place, when IDEO, one of today's most renown innovation consulting firms and DT's leading practitioners, started to apply and promote it.[158]

3.5.5 Design Thinking

Design Thinking's worldwide recognition on an industrial footing is undeniable. Both established corporates and start-ups adopt Design Thinking, to become what is known as a 'design-centered' organization. A few examples: Procter & Gamble with DesignWorks in 2001[159], Airbnb in 2009[160], IBM with 'IBM Design Thinking' in 2013[161], Samsung with its Samsung Design Strategy 3.0 in 2011[162] and Pepsi with 'PepsiCo Design & Innovation' in 2012[163]. Following acquisitions also provide evidence of this shift: Finance supplier Capital One acquired the former independent design consulting firm Adaptive Path in 2014[164]. Like what global operating consulting firms did, such as McKinsey & Company by acquiring Lunar in 2015[165] and Accenture by acquiring Fjord in 2013[166]. Also in academia, universities such as Stanford University and the d.school in 2005[167], University of Potsdam with HPI School of Design Thinking in 2007[168] and Aalto University with Design Factory in 2008[169]. Let us shortly elaborate on the concept of Design Thinking.

Tim Brown, IDEO's current CEO explains Design Thinking as follows: "Design thinking is a human-centered approach to innovation that draws from the designer's toolkit to

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[158] Cf. IDEO (2019), available online at https://www.ideou.com/pages/design-thinking request of 21st Februray 2019.
[159] Cf. Riel (2009), pp. 79 ff
[160] Cf. Schmiedgen (2019), available online at https://thisisdesignthinking.net/2015/05/airbnb-design-thinking-example/ request of 20th February 2019.
[161] Cf. Gilbert (2013), available online at https://www.ibm.com/analytics/globalelite/ibm-design-thinking-global-elite-clients request of 21st February 2019
[162] Cf. Samsung (2011), available online at http://design.samsung.com/global/contents/design_history/ request of 21th February 2019
[163] Cf. PepsiCo Design & Innovation (2012), available online at http://design.pepsico.com/our-mission.php?v=73#section7 request of 21th February 2019.
[164] Cf. Muller (2016), available online at https://www.adaptivepath.com/ideas/eg-html/ request of 21st February 2019
[165] Cf. McKinsey & Company (2015), available online at https://www.mckinsey.com/about-us/new-at-mckinsey-blog/landing-lunar request of 21st February 2019
[166] Cf. Accenture (2013), available online at https://newsroom.accenture.com/industries/communications/accenture-completes-acquisition-of-fjord-expanding-digital-and-marketing-capabilities.htm request of 21st February 2019
[167] Cf. Hasso Plattner Institute (2019), available online at https://hpi.de/en/the-hpi/organization/history.html request of 19th February 2019
[168] ibidem
[169] Cf. Green (2009) available online at https://www.ft.com/content/5399caa8-1aeb-11de-8aa3-0000779fd2ac request of 21st February 2019.

integrate the Tim Brown, IDEO's current CEO explains Design Thinking as follows: "Design thinking is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success"[170]. By "thinking like a designer (that is why "Design Thinking") it can transform the way organizations develop products, services, processes and strategy"[171]. A key take-away at this point might be that it "allows people who aren't trained as designers to use creative tools to address a vast range of challenge" and hence, to execute on it.[172]

In fact, it's not a clearly defined and distinct discipline but rather a meta-discipline or meta-profession, that borrows from a variety of exact and non-exact sciences.[173] Depending on the project's context and requirements, this can range from humanities such as ethnography, anthropology, psychology, arts over social sciences such economics till the development of software. The underlying goal is, in fact, a mediation between the two design-paradigms. On the one hand the "rational positivistic" (reasoned action based on science) and on the other hand the "intuitive artistic" (action without reason and prediction of the outcome, i.e.: try and error).[174] The practice of mediation is for some scholars and practitioners equivalent to the notion of abductive thinking respectively for them it represents even a third paradigm.[175] Figure 15[176] illustrates these notions.

[170] Brown (2009), available online at https://designthinking.ideo.com/ request of 21st Februray 2019
[171] IDEO (2019), available online at https://www.ideou.com/pages/design-thinking request of 21st February 2019
[172] IDEO (2019), available online at https://www.ideou.com/pages/design-thinking request of 21st February 2019
[173] Cf. Lindberg (2014), pp. 197 ff
[174] ibidem
[175] Cf. Lindberg (2014), pp. 174 f; Cf. Peirce (1903) n.pag.; Cf. Martin (2009), pp. 48 f
[176] Cf. Martin (2009), pp. 53 ff

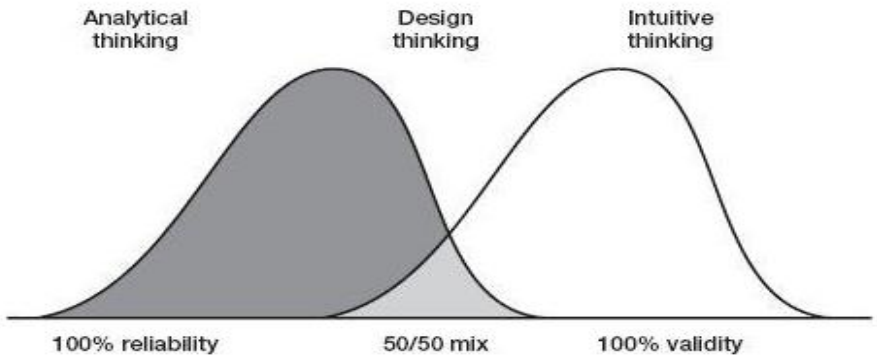

Figure 15: Illustrates the predilection gap in light grey in the center (labeled “50/50” mix. Martin proposes to get a good mix between analytical thinking (rational positivistic; reasoned based on science) and intuitive thinking (intuitive artistic; action without reason nor prediction of the outcome). Hence, it’s demonstrates a balancing act, a mediation between reliable (reliability) and valid (validity) decisions and outcomes to succeed as an organization.

Hence, adopting merely one paradigm leads, either in short- or long-term, to threat to any organization. Martin explains this as follows: “In an environment that relies primarily on analytical reasoning as a guide to action, past experience carries great argumentative weight. It nearly always prevails against proposals that can only be proven by future events. Because it is so well suited to satisfying the organizational demand for proof, reliability almost always trumps validity. But it is all too often a hollow victory. When the future takes a different course than the path the data predicted for it, all the proofs in the world are unavailing”[177].

In a recent interview, he further addressed this notion by explaining it through a different example: “From which time is all the data from? - right, from the past - Hence, you crunch data from the past, so the future will be an extrapolation of the past, right? – But then, how can you crunch data that is from the past, to figure out that has never happened before?”[178].

[177] Martin (2009), pp. 44 ff
[178] Martin (2018), available online at https://www.youtube.com/watch?v=_MeYssSwvLw request of 21st February 2019

3.5.5.1 Abductive thinking

'Abductive thinking' put in a nutshell by Peirce, the father of this concept in 1903:" Abduction is the process of building an explaining hypothesis. It is the only logical process to introduce a novel idea at all since induction only determines value and deduction only renders necessary consequences based on plain hypothesis"[179]. This notion of that balancing act is also mirrored a recent feature article at Harvard Business Review on how to establish a corporate innovation culture.[180] The bottom line of the article can be phrased as follows: It is the balancing act of intuitive, free-flowing of ideas, setting no direction due to fuzzy front-end and embracing every input without instant evaluation while sometimes and on the other hand sticking to rigid rules, discipline and decisions based on data from the past.

Finally, Design thinking at the core can be boiled down to two guiding principles:

- Obsession with humans. Led by empathy and putting insights on people's hopes, fears, needs, behavior, etc., at the center of every design decision.
- Applying abductive reasoning. Balancing act of validity and reliability. After forming the "explaining hypothesis" of "what might… be" respectively "how might we…" a subsequent phase of deduction and induction follows to achieve both validity and reliability. Hence, iteration is an inherent part to capture value from practicing abductive reasoning

3.5.5.2 Adaption of former leading innovation model

A prominent example on the application of new management thinking is the recent amendment by Cooper, the author of the ground-breaking Stage-Gate Process, initially published in 1996. In his updated version in 2014, he emphasized the agile and iterative approaches in new product development. In an interview, in 2015, he stated: "Different to the original model is also that the product is not defined upfront and passes the gates in linear manner. Instead, the product specifications are not defined upfront, it evolves over time by facing customer's feedback early in the process. Since the finding upfront is usually wrong."[181]

Let us take a brief look at a few compelling examples of the application and resulting implications, as indicators for Design Thinking's impact in various domains

[179] Strübing (2005), pp. 84
[180] Cf. Pisano (2019), pp. 62 ff
[181] Cooper (2015), available online at https://www.youtube.com/watch?v=VCWM4ZI_iHo&t=602s request of 21st February 2019.

3.5.5.3 Integrative thinking

By selling a unit of a product or service what usually comes along are variable cost (e.g.: costs of material or labor force). However, this trade-off was only valid by principles ruling the old economy. The purchase of digital services such as a Netflix subscription does not come with the expense of significant variable costs. This is a game-changer since marginal costs go towards zero. (see also a scarcity of goods)[182]. Trade-offs disappear and new ones enter and create opportunities for new players to emerge. To address these new opportunities, Martin proposes to apply integrative thinking (IG).[183]

IG uses commonly perceived trade-offs, takes the advantages of both the opposing models and integrates them into a new model. The new model contains elements of each but is superior to both. Let us translate this concept into a tangible example. In his book he cites the example of Toronto Film Festival (TFF): TFF is a publicly open event, where everyone can buy tickets and see the movies. However, the revenues generated were low. Whereas the film festival in Cannes (CFF) is merely accessible for an exclusive group of experts, elite jury and movie stars are invited to ensure a superior touch of the event. CFF prospers by the high revenues from sponsorship due the media buzz and prizes. TFF envied the financial position CFF, while the element of exclusiveness in CFFs model is nothing that TFF stands for and hence, would never incorporate. The integrative solution is the people's choice awards. Instead of an elite jury voting for the best movies, the community does. Today TFF revenues are ten times higher than those of CFFs. Instead of accepting the trade-off of high revenue and media buzz at the expense of providing free access to a public community, they combined the advantages of each model and made one that is superior to both.

IG can serve as another tool to design thinking and vice versa when it comes to innovative business models beyond the conventional wisdom of trade-offs and applying practicing abductive reasoning.

3.5.5.4 Wicked problems

When David Kelley (Co-Founder of IDEO) pitched his idea about establishing the d.school at Stanford University, he explained the unique role of design to address a certain nature of challenges. His brother Tom Kelley (Co-Founder IDEO) rephrased this in an interview in 2017: "It's important that people with great minds go deeper and deeper in the fields of their knowledge, however there are problems in the world today that are not going to be solved when going deeper, but they are going to be solved by going

[182] Cf. TU Wien (2001), pp. 12 ff
[183] Cf. Martin (2018), available online at https://www.youtube.com/watch?v=_MeYssSwvLw request of 21st February 2019

broader. Therefore, we need businesspeople in the room, next to lawyers, designers, anthropologists and so on. Because these complex messy problems are so multifaceted that no single discipline can solve them".[184]

Hence, it is less the application of expertise of a single discipline but the act of gaining knowledge of certain domains and the act of linking different disciplines and domains together. Later in the interview Kelley highlights, "it's not instead of this deep scientific work, but in addition to"[185] and hence supports the view of the balancing act used in abductive thinking.

As a side note at this point, on what we can learn to build the entrepreneurial university: Peter Kelley also explained in this pitch about the d.school at Stanford that universities "are set up for deep thinking. Deep thinking means going deep in their particular field of knowledge"[186]. Bridging at this point to the concept of the entrepreneurial university, design thinking may play an important role for universities to increase the incorporation of broad thinking instead of merely deep thinking, in order to become more innovative and tackle these messy complex problems.

In fact, these complex messy problems are cast into a concept by Rittel in 1972, termed 'wicked problems'.[187] It's named 'wicked' because it cannot be solved by formal-rationalistic approaches. In fact, they are not completely solvable at all, due to their social complexity. However, due to their societal relevance, it is necessary to work in it.[188] Peters cites some examples of wicked problems: Inequality, poverty, economic underdevelopment, crime, etc.[189] Rittel offers characteristics that make these problems wicked. Some of them are cited here:[190] i) There is no definite formulation, ii) They have no stopping rule iii) Solutions to wicked problems are not true-or-false, but good-or-bad iv) There is no immediate and no ultimate test of a solution to a wicked problem.

At the beginning of the 1990s, Buchanon described the relevance of wicked problems for design as follows:

„Design problems are [...] wicked because design has no special subject matter of its own apart from what a designer conceives it to be. The subject matter of design is potentially universal in scope because design thinking may be applied to any area of human experience. But in the process of application, the designer must discover or invent a particular subject out of the problems and issues of specific circumstances. This sharply

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[184] Kelley (2017), available online at https://www.youtube.com/watch?v=L1pBhHjGKvI request of 19th February 2019
[185] ibidem
[186] ibidem
[187] Cf. Rittel (1972), pp.390 ff; Cf. Lindberg (2014), pp. 74
[188] Cf. Lindberg (2014), pp.74
[189] Cf. Peters (2017), pp.385 ff.
[190] Cf. Rittel/Webber (1973), pp.161 ff

contrasts with the disciplines of science, which are concerned with understanding the principles, laws, rules, or structures that are necessarily embodied in existing subject matters. Such subject matters are undetermined or under-determined, requiring further investigation to make them more fully determinate. But they are not radically indeterminate on a way directly comparable to that of design."[191]

And Coyne, to highlight that more problems than we might assume contain wicked elements, adds that „wicked problems are the norm. It is tame formulation of professional analysis that stand out as a deviation"[192].

3.5.5.5 Design Thinking and social impact

IDEO demonstrated design thinking by consulting the American Refugee Committee in the domain of foreign aid to help economically underdeveloped countries. Among many examples, in this case, in the Republic of Congo the traditional approach of donations did not bring the expected effect, despite a vast amount of financial support[193]. A human-centered design approach nurtured by the complex insight on the hopes, needs, and fears of humans in extreme poverty resulted in a community-run, self-financing and even scalable start-up called Asili. It provides water, crops and health care in a way that worked for the people.[194] One of the guiding insights identified was the need for stable prices of health care. Designing for ensuring this stability increased the demand and utilization of this service offer significantly.

As we learned, today human-centered design transcends its traditional tangible product-oriented dimension, towards an intangible one about services and experiences. Further it is no longer applied merely at the final stages of the value chain (product development process), order words, making things a little prettier and aesthetic usable to humans, while the product, in its functionalities and value propositions, is already finished. Instead, it starts at the very beginning, when it is applied to strategy, while not knowing whether the final solution results in a tangible product, an app, a service, an event, or a movement. Finally, not it is only bounded to commercial product or services but to experiences of a patient in a hospital, airport journeys, and helpline services.

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[191] Buchannon (1992), pp.16
[192] Coyne (2005), pp.12
[193] Peters (2017), available online at https://www.fastcompany.com/40410165/this-community-run-business-creates-a-sustainable-stream-of-food-water-and-health request of 21th February 2019
[194] IDEO - The Field Guide to Human-centered Design (2015), pp.129

3.6 The design of experiences

With the background knowledge of the paradigm shift in management and the practice of design thinking, we shed light on a particular concept in this context: The design of experiences.

The emerge of literature on the topic of customer experience dates back to the mid-1980s.[195] A time, when literature on consumer behavior perceived customers as rational decision-makers, led by self-interest and directed to maximize output. The model of the 'homo economicus'[196] serves as compelling example. The model's perception on consumers might still carry some echoes from a past, back when Adam Smith's 'invisible hand' took care of a community's well-being, when each individual merely looked after its own interest and rational economic progress. New differentiators of value beyond the traditional ones such as price, product quality received initial attention: "The role of emotions in behavior; the fact that consumers are feelers as well as thinkers and doers; [...] the roles of consumers, beyond the act of purchase, in product usage as well as brand choice"[197]. Further, recent predictions assert that 89 % of managers expect to compete mostly on the basis of customer experience. This would make a 36 % increase from four years ago.[198] While these numbers might vary between the type of business, the rising tendency is undoubted.

3.6.1 Experience as a progression of economic value

Additional momentum gained the field of customer experience in the 1999 published book 'Experience Economy' by Gilmore & Pine. They were the first to interpret and frame the experience as a distinct economic offering and described a rising trend towards services and experiences by the notion of the 'progression of economic value'. Due to the economic restructuring from commodities (e.g.: raw materials) over goods (e.g.: products) to services and finally experiences. In the future, the progression of value should continue towards transformation, see figure 16.

Pine and Gilmore added the following explanation on how the economic offerings relate to each other:[199]

- Commodities are only material components of the products in which they are comprised. Goods are only physical embodiments for the services they deliver.

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[195] Holbrook/Hirschman (1982), pp.396 f
[196] Noci (2007), pp. 396; Holbrook/Hirschmann (1982), pp.396 f
[197] Addis/Holbrook (2001), pp. 50 ff
[198] Cf. Gartner (2014), available online at https://blogs.gartner.com/jake-sorofman/gartner-surveys-confirm-customer-experience-new-battlefield/ request of 19th February 2019
[199] Cf. Pine II/ Gilmore (1998), available online at https://hbr.org/1998/07/welcome-to-the-experience-economy request of 19th February 2019

- Services are only temporal activities for the experiences they create.
- Experiences are only memorable events for the transformations they enable Transformations are only the earthly possibilities for the perfection God can one day instil.

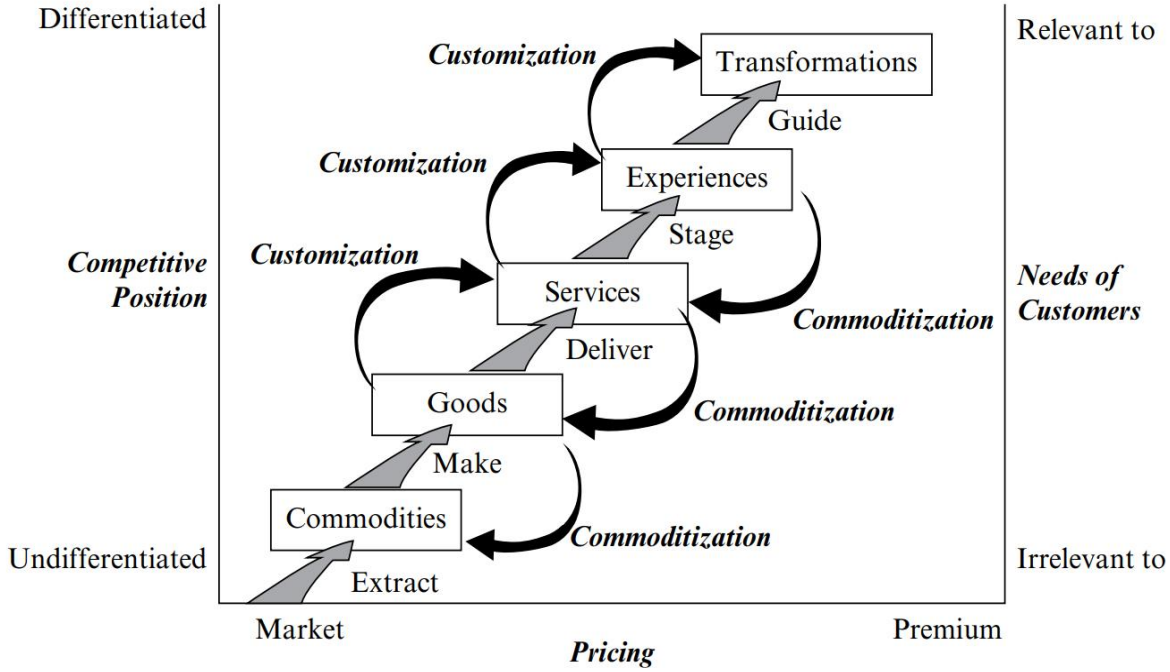

Figure 16: The progression economic value described by Pine and Gilmore.

3.6.1.1 Example of cake for children birthday party

The following example of a birthday cake at children birthday party should help explain the relationship between the economic offering and the progression of economic value in a more tangible manner

Commodities: The basic ingredients such as flour, sugar, chocolate, etc. are purchased but the preparation, or in other words, the production of the cake is all done by oneself.

Goods (or products): A ready-made frozen birthday cake is purchased in the supermarket.

Service: A ready to be consumed birthday cake is delivered right to the birthday party place by a birthday cake delivery service.

Experience: A hired birthday party clown stages the presentation of the birthday cake and entertains the audience.

Transformation: For the example of a birthday cake in terms of a transformation, this model might reach its limits. However, when applying the model and so customize this

experience as described before and tailor it uniquely and personally to the hopes and needs of the birthday child respectively to its guests, we could imagine a transformative economic offering.

At this point we would like to mark a side note addressing the entrepreneurial university: The type of economic offering such as transformation may play an important role in the strategy of an entrepreneurial university. The degree to which entrepreneurial universities do commoditize respectively customize the experiences to transform their students into entrepreneurs might be an important subject matter for discussion. Let us know continue with the progression of the economic value in a national economic point of view.

The shift towards rather intangible economic offerings can also be argued by the rising share of the gross domestic product (GDP) that account for services. In the United Kingdom (UK), 79 % of the GDP comes from services in 2014. This marks an increase from 49 % in 1948[200]. The Economic progression of value also suggests that larger margins respectively profits are rather to be marketable and earned the higher you move up the ladder. This goes hand in hand with the phenomena of the race-to-the-bottom explained in chapter 3.4.3.3 Change in power-balance. Experiences have “become the predominant economic offering, the primary source of job creation and economic growth”[201]. Examples are cited as follows: “Many manufacturers – think of IBM, for example – now make more money from their “ancillary” services than from their “core” goods. In the same way, service companies (e.g.: retailer, hotelier and so forth) gave away experience elements to better sell their offerings.”[202]

In a recent article from Pine and Gilmore, they argued the relevance of experiences to launch innovative products and services as follows: “Innovators must recognize that in a world saturated with largely undifferentiated and therefore commoditized goods and services, staging experiences offers an untapped opportunity for value creation.

Let us now take a look on a few attempts to conceptualize experience as such.

3.6.2 Experience as a concept

Along with Pine & Gilmore’s[203] pioneering contribution, a handful of models appeared in the following years. Before we elaborate on a few concepts we firstly find a practical definition of the models of experience, which by far is not settled on a single interpretation. Two of them are presented.

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[200] Office for national statistics (2016), available online at https://www.ons.gov.uk/economy/economicoutputandproductivity/output/articles/fivefactsabouttheukservicesector/2016-09-29 request of 19th February.
[201] Pine/Gilmore (2013), pp. 22
[202] ibidem
[203] ibdiem

The first stems from an article in 2007, which presents a merged version of a few contributors in this field. The authors' point of view to define the models comes from the "evolution of the concept of the relationship between the company and the customer"[204]:

''The Customer Experience originates from a set of interactions between a customer and a product, a company, or part of its organization, which provoke a reaction"[205]. This experience is strictly personal and implies the customer's involvement at different levels (rational, emotional, sensorial physical and spiritual).[206] Its evaluation depends on the comparison between a customer's expectations and the stimuli coming from the interaction with the company and its offering in correspondence of the different moments of contact or touchpoints"[207]. Don Norman, who coined the term "User experience" defines it as follows[208]:

"User experience encompasses all aspects of the end-user's interaction with the company, its services, and its products."

While we distinguished in a previous chapter on the concept of User and Customer, we use both User Experience (UX) and Customer Experience (CX) interchangeably to keep the focus on the experience as such. Let us shed some light on the concept to describe experiences.

An important side note towards the value of these applied models: Every concept respectively model does naturally have its limits since we learned that empirical cases continue to appear where these concepts can hardly provide a reasonable and sufficient answer to it. However, this is not to say, they do not provide value. In fact, it depends on how you use them. This circumstance might be best concluded by the following quote from George Box: "All models are wrong, but some are useful". And this usefulness can simply be the fact that the more models and concept one takes into consideration and puts on practices, the more and the better questions can be raised to obtain a richer, broader and hence holistic understanding of experiences, their value and effects to the customer. The more questions that can be raised, the more screws to be adjusted can come to light and hence, inherently increase the chance for especially these multifaceted experiences and economic offerings to be valued by customers.

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[204] Noci/Spiller/Gentile (2007), pp. 397 f

[205] Cf. LaSalle/Britton (2003),available online at https://hbswk.hbs.edu/archive/priceless-turning-ordinary-products-into-extraordinary-experiences-creating-the-priceless-product request of 19th February 2019; Cf. Shaw/Ivens (2005), pp.149 ff

[206] LaSalle/Britton (2003), available online at https://hbswk.hbs.edu/archive/priceless-turning-ordinary-products-into-extraordinary-experiences-creating-the-priceless-product; Schmitt (1999), pp.53 ff

[207] Cf. LaSalle/Britton (2003),available online at https://hbswk.hbs.edu/archive/priceless-turning-ordinary-products-into-extraordinary-experiences-creating-the-priceless-product request of 19th February 2019; Cf. Shaw/Ivens (2005), pp.149 ff

[208] Pine/Gilmore (2013), pp. 21 ff

3.6.2.1 Four realms of an experience

This model describes experiences across two dimensions and subsequently categorizes an experience in four realms respectively fields. Initially developed by Pine & Gilmore in 1998, Mereu advanced this model in 2016 by integrating three more models within these dimensions, see figure 17[209]. The first dimension spans from 'active participation' to passive participation' while the second dimension spans from 'immersion' towards 'absorption'. The resulting fields are 'Entertainment', 'Educational', 'Esthetic' and 'Escapist'. Let us first detail on the dimensions:

- Active/passive participation: It refers to which degree the customer is, so to speak co-creating the experience. It means how much of the experience is produced by the customer and how much by the company offering the experience. Following example can help explain it:[210] Improvisational theatre play: The customer, in this case, the audience can co-create the experience by as they can throw words to the actors on stage and called upon to interpret it. Hence, they rate high on active participation. A case of rather passive immersion happens when audience is merely watching the play without any act of influencing the actors in their execution on stage, hence, without influence on the resulting experience.
- Absorption/immersion: This dimension refers to the environment in which the customer consumes the experience. Taking again the example of the improvisational theatre play[211]: Being part of the audience live at the theatre house rates high on immersion while watching this play for example from a smartphone while commuting to work it is rather an absorption. Hence, it takes environmental components such as smell, sounds, sights, and being surrounded by other people, etc. into consideration which differs depending on the exposure to the customer.

[209] Mereu (2016), available online at https://footballmarketing.tv/2016/03/09/applying-the-experience-economy-model-to-the-periscope-channel-of-a-football-club/#comments request of 19th February 2019
[210] Cf. Pine II/ Gilmore (1998), available online at https://hbr.org/1998/07/welcome-to-the-experience-economy request of 19th February 2019
[211] Cf. Pine II/ Gilmore (1998), available online at https://hbr.org/1998/07/welcome-to-the-experience-economy request of 19th February 2019

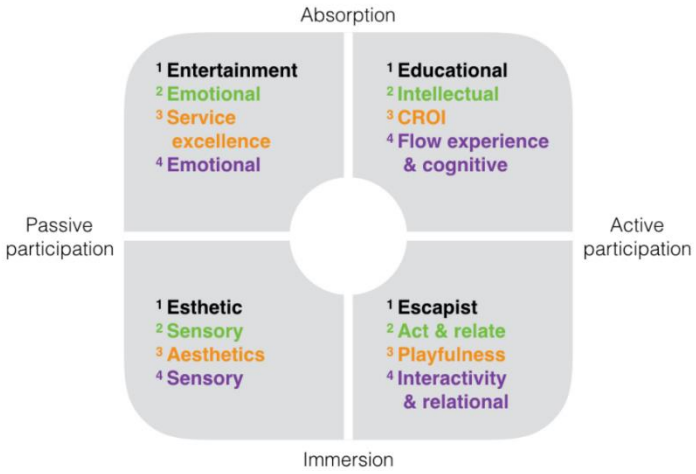

Figure 17: Adapted from Pine and Gilmore (1998) (1); expanded with Brakus, Schmitt and Zarantenello (2); Mathwick, Malhotra, and Rigdon (2001) (3); Vasquez and Cheng (2015) (4). Combined by Mereu (2016)

The ability to integrate the four additional models as which are mentioned in the caption, support the work of Pine and Gilmore. They confirm, to a certain extent, a similar perspective on how to describe and shed light on experiences.

3.6.2.2 Components of experiences

Noci suggests that an experience can consist of six components that are sometimes more or less extant and influential to the customer, depending on the product or service and on the customer himself.[212] The components described are as follows:[213]

Sensorial: Affecting the "senses by, for example sight, hearing, touch, taste and smell so as to arouse aesthetical pleasure, excitement, satisfaction, sense of beauty".

Emotional: The "generation of moods, feelings, emotions; an offering can generate emotional experience in order to create an affective relationship with the company". "As good examples serve brands "that claim a strong emotional link with their customers such as Barilla and Kinder Surprise".

Cognitive: Connected to thinking respectively conscious mental processes. "The offering may engage customers in using their creativity or in situations of problem-solving. Furthermore, a company can lead consumer to revise the usual idea of a product or some common mental assumptions".

Pragmatic: "The practical act of doing something". It can, among others, be the usability of a product that helps to get a job done faster.

[212] Cf. Noci/Spiller/Gentile (2007), pp. 398 ff
[213] ibidem

Lifestyle: Addresses the values and beliefs of a customer “often through the adoption of a lifestyle andbehaviors”. An example might the use of certain brands that insinuate a certain lifestyle.

Relational: In short, the relation with other people. “A person and, beyond, his/her social context, his/her relationship with other people or also with his/her ideal self.” An offering can foster relationships the feeling of community and belonging to something and someone.

3.6.2.3 Commitment/Involvement Matrix

A further model developed, similarly addressing the degree of participation and the immersion of an experience was suggested by Noci in 2007[214]. They term the model the Commitment/Involvement’ matrix.

According to them, commitment stands for “the effort in terms of resources the customer invests being able to use and operate the product”[215]. For example, a higher level of commitment by the customer is required in case of low usability, hence a rather complex usage of the product. It addresses mainly the cognitive component of an experience.[216]

Involvement: To which degree the customer views the product or service as a part of itself, addressing its self-image.[217] It addresses, in terms of the components of an experience, the ones of the emotional and the lifestyle.[218]

3.6.2.4 Jobs-to-be-done Theory

Further concepts, not in particular on experiences but on the differentiators of economic offerings as such, can be found in the “Jobs-to-be-done” (JTBD) theory. Developed around the edge of the millennium by scholars from different domains through publications such as “Outcome driven Innovation”[219] and later “Competing against luck”[220]. According to Christensen (Author of “Competing against luck”) a Job to be done is “a job as the progress that a person is trying to make in a particular circumstance”[221]. Further, each job consists of three domains, or aspects as he terms it, that “progresses” the person: Functional, emotional and social. We can recognize similarities comparing these views to the previous models, such as ‘hedonic vs. utilitarian’ job.

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[214] Noci/Spiller/Gentile (2007), pp. 402 ff
[215] Noci/Spiller/Gentile (2007), pp. 403 f
[216] ibidem
[217] Cf. Noci/Spiller/Gentile (2007), pp. 402 ff
[218] ibidem
[219] Ulwick (2005), n.pag.
[220] Christensen/Dillon/Hall/Duncan (2016), n.pag.
[221] ibidem

Critics on this theory come from scholar Klement. He challenges Christensen's interpretations, in his book "When coffee and kale compete" by proposing that customers usually are directed towards an overarching 'be goal', to progress towards their 'ideal self' (referring to Power's hierarchy of goals[222]) and hence decide based upon whether or not a JTBD serves this overarching goal. This is meant to be contradicting to the view of Christensen, in which a JTBD was influenced and based upon merely to a particular circumstance.

3.6.2.5 Moment of truth

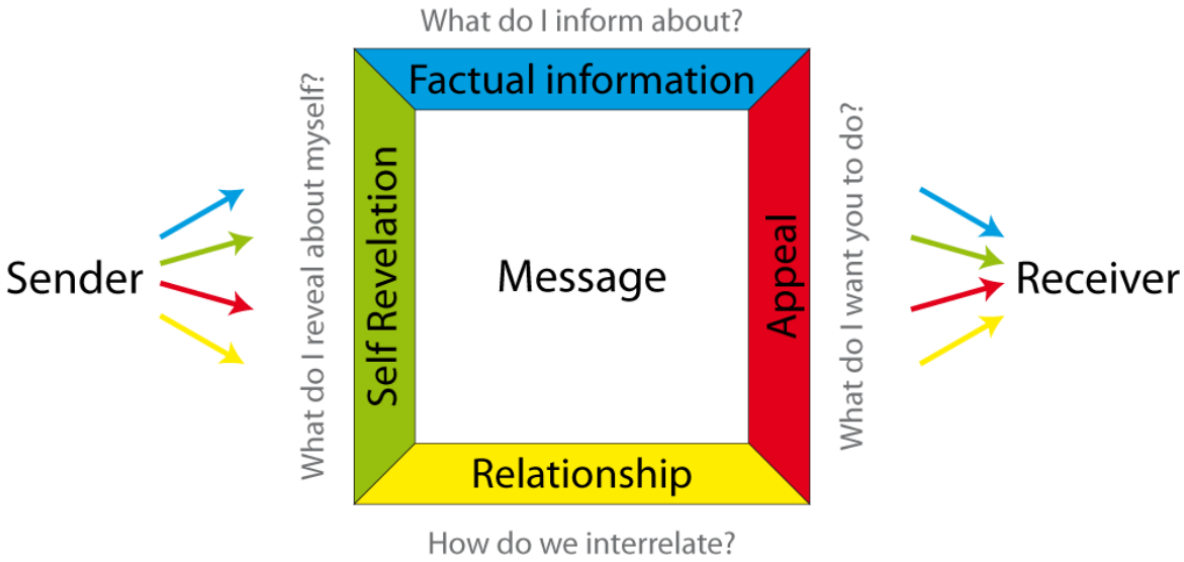
The application of this model should inherently also help to reach a somewhat a reliable prediction on what do customer value most respectively what point of interaction or experience made them decide for that specific economic offering. This is also based on the view that not every interaction with the economic offering is to the same degree contributing to the final decision of the customer respectively his perception of value. In the domain of service design, a concept termed the "Moment of truth" (MoT) emerged, ought to represent exactly that moment respectively experience that caused a customer to execute the decisivebehavior[223] to e.g.: purchase the product or crafts a good or bad rating. Without doubt, there can also be multiple MoT's along with different effects, be present and connected to one decision. Google further developed and interpreted the concept of MoT in 2011.[224]

3.6.2.6 Four sides of message

With the last concept on this matter, we would like to address the fact that even though the customer's needs and values are known to a sufficient extent, one can still fail on the intention perception gap. This gap is well demonstrated by the model from Schulz von Thun, see figure 18 termed 'Four side of a message'. It should demonstrate that information can be perceived in four different ways (factual, appeal, relationship and self-revelation). The classic example deals with a situation of a couple in car at a crossing[225].

Figure 18: Schulz von Thun's model Four sides of a message

[222] Power (1973), pp.351 ff
[223] Carlzon (1987), n.pag.
[224] Ertemel/Köksal (2017), pp.463 ff
[225] Cf. Ranftler (2016), available online at https://blog.rwth-aachen.de/designthinking/tag/four-sides-model/ request of 19th February 2019



At that moment, the traffic lights turned green the partner (co-driver) informs the other partner (driver) about the fact the light just switched. Four different perceptions can be constructed by the driver:

A) Factual information: The green sign is on.
B) Self-revelation: I want to get going.
C) Relationship: You need my help.
D) Appeal: Go!

This also easily translates into the context of the entrepreneurial university. When a student perceives an event on entrepreneurship rather on a factual level while the intention of the organizers was to address build a relationship with him. Hence, it is not only important to get value right but also to deliver it the way it was intended to avoid misunderstandings.

A new differentiator of value

As we learned in the introduction of this chapter, experiences stand for a new differentiator beside the traditional ones of price, quality, and product.[226] The model of 'utilitarian vs. hedonistic value' makes clear that an economic offering can have a utilitarian (functional) and hedonistic (experiential) value.[227] Traditional differentiators might rather merely be classified within the utilitarian value sphere, see figure 19. While the new differentiators are located within the balanced and hedonic (experiential) value sphere.

Let us now elaborate on the literature of entrepreneurship education relevant to this thesis.

[226] Addis/Holbrook (2001), pp.50 ff; Cf. Klement (2018), pp.7 f
[227] Addis/Holbrook (2001), pp. 50 ff

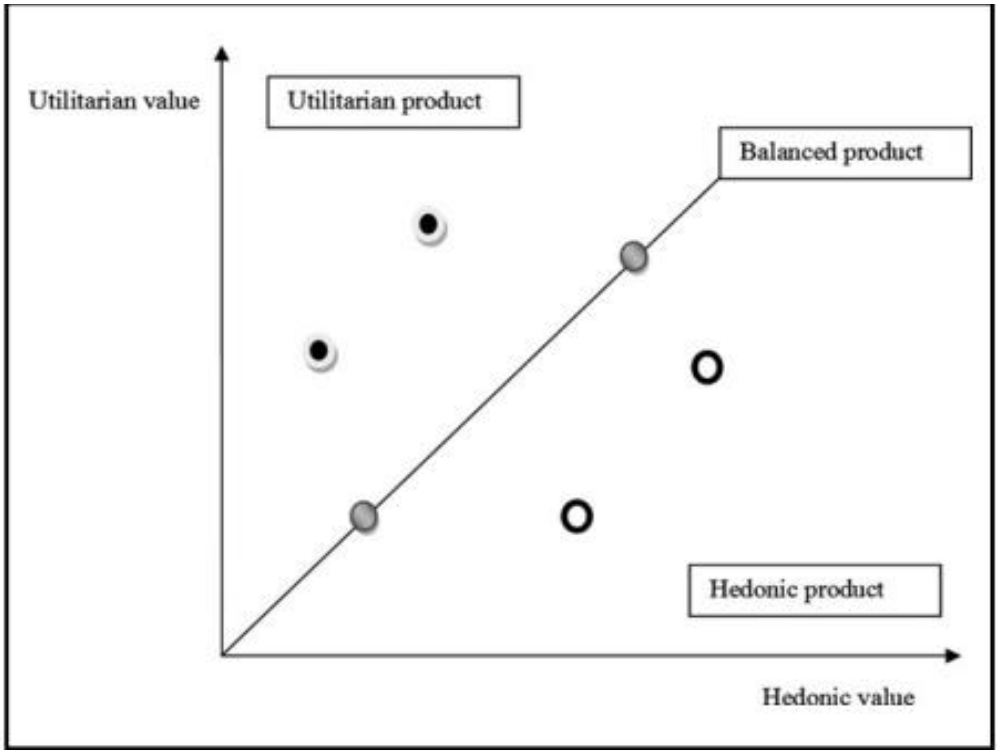


Figure 19: Hedonic, utilitarian and balanced products

4 Entrepreneurship Education

This chapter deals with entrepreneurship education (EE) taught on academic level, involving all, so-called, higher education institutions (HEI). After introducing to the concepts of entrepreneurship, entrepreneurship education and the entrepreneurial university, a theory on how to put EE to practice is presented.

4.1 Entrepreneurship

Entrepreneurship is perceived as the main ingredient to drive innovation and economic growth.[228] Schumpeter even attributed entrepreneurship to be "at once a unique factor of production and the rare social input to make history evolve".[229] He was the first to attempt describe entrepreneurship and pioneered with the statement of: "The function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry and so on".[230]

4.1.1 Definition of Entrepreneurship

Till today, entrepreneurship has not settled on a single definition, on the one hand, due to the variety of point of views on the matter and on the other hand probably due to its unprecedented attention in the new economy. Schumpeter again became known for his definition of innovation as the notion of "creative destruction" perceived as a natural process occurring in capitalistic economies and the entrepreneur who initiates and drives it[231]. The Global Entrepreneurship Monitor (GEM), a "trusted resource" by several supranational intuitions such as United Nations (UN) and the World Economic Forum (WEF) defines entrepreneurship as follows: "Any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business."[232] Peter Drucker formulated his point of view as "at the fundamental level, simply changing or transmuting value"[233].

[228] Cf. Kuratko (2005), pp. 577 ff
[229] Sledzik (2013), pp. 91 f
[230] Schumpeter (1942). n.pag; Sledzik (2013), pp. 92 f
[231] Schumpeter (1934), n.pag.
[232] Bosma/Wennekers/Amoros (2012)
[233] Drucker (1985)

Sarasvathy and Venkataraman conceptualize entrepreneurship as a “powerful social force”[234] and transcend from the “traditional notion of an academic construct”[235]. Alongside this definition, they suggest that “everyone, not just aspiring business owners, need to be taught entrepreneurship”[236].

4.1.1.1 Intrapreneurship

In the wake of the increased attention on entrepreneurship, the concept of intrapreneurship respectively the intrapreneur appeared. The concept of the Intrapreneurship differs from entrepreneurship by the circumstance that the “entrepreneurialbehavior is performed within existing organizations”[237]. For example, employees that drive innovation within and for their corporation.

4.1.1.2 Self-employment vs. entrepreneurship

For some scholars, entrepreneurship also differs from self-employment as such regarding their views on the intention to risk, innovativeness, scalability.[238] While “self-employed small business owners are content with a stable business that can operate using the standardized channels of operations and financing such a (sic!) bank loans”, the entrepreneurs “on the other hand tend to work in a much more radical manner with fewer limitations on their operations”[239]. This allows them to create not only new business but, in some cases, completely new industries. They are driven to accomplish and to create not simply operate”.[240]

In this thesis, when referring to entrepreneurship respectively to the entrepreneur we include all forms of starting a new business (self-employed and entrepreneur).

4.1.1.3 Entrepreneurial actions vs. entrepreneurial commitment

Lastly, we would like to clarify two expressions heavily used in this thesis. On the one hand entrepreneurial actions and on the other hand entrepreneurial commitment. While the first one refers to all activities connected to the entrepreneurial journey (pitching idea at a start-up event, etc.), it does not involve having officially founded a company. The latter one refers to the official commitment to become an entrepreneur and hence to found a company.

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[234] Sarasvathy/Venkatamaran (2011), pp. 113 ff
[235] Henry/Lewis (2018), n.pag
[236] Sarasvathy/Venkatamaran (2011), pp. 113 ff; Henry/Lewis (2018), n.pag.; Kuratko (2005), pp. 577 ff
[237] De Jong/Wennekers (2008), pp. 5 ff
[238] Cf. Tandemlaunch (2011), assessed: 20th February: http://www.tandemlaunch.com/entrepreneurship-isnt-self-employment/
[239] Watson (2011), assessed: 20th February: https://riccenter.ca/2011/07/entrepreneurship-vs-self-employment/
[240] ibidem

We shed some light in particular on the concept of entrepreneurship education, we briefly introduce to the concept of the entrepreneurial university to provide some background.

4.2 Entrepreneurial university

As we learned from the thesis' introduction, the emerge of the entrepreneurial university resulted, among other reasons, from the global economic restructuring towards a knowledge economy. Resources such as knowledge (R&D), proximity to a constant inflow of labor (students) and an infrastructure build to experiment are inherent to the university and serve now as the new production factors in the new economy.

Hence, universities around the globe started taking this new role in the context of innovation. It means switching from the assistant of innovation towards its initiator and driver, hence to its main protagonist. The table in figure 20, depicts the evolution of the university by the adoption of the missions such as teaching, research, and entrepreneurship

Teaching	*Research*	*Entrepreneurial*
Preservation and dissemination of knowledge	1st academic revolution	2nd academic revolution
New missions generate conflict of interest controversies→	Two missions: teaching andresearch	Third mission: economic and social development; old missions continued

Figure 20: The expansion of the university mission: Teaching, research and entrepreneurial.

Etzkowitz comprises the entrepreneurial university as the keystone in his triple helix model of innovation (triple helix model: describing the interaction of academia, government and industry to drive innovation) and consists of the following three elements:[241]

- A more prominent role for the university in innovation, on a par with industry and government in a knowledge-based society.
- A movement toward collaborative relationships among the three major institutional spheres in which innovation policy is increasingly an outcome of interactions among the spheres rather than a prescription from government or an internal development within industry.
- In addition to fulfilling their traditional functions each institutional sphere also 'takes the role of the other' operating on a vertical axis of their new role as well as on the horizontal axis of their traditional function.

[241] Etzkowitz, H. (2008), 683 f

He further asserts that the “transition of the entrepreneurial university also encompasses the transition from an individual to collective and organizational entrepreneurship”[242]. Already Drucker, in 1985, supported the notion of organizational entrepreneurship by stating that: “If entrepreneurship is essentially the process of taking leadership in putting ideas into practice, filling the gap between invention and innovation, then organizations, as well as individuals, may serve as entrepreneurs.”[243]

4.3 Entrepreneurship education

Fostering entrepreneurship receives increased attention for public policymakers. A special role is assigned to universities, mainly for reasons of their inherent proximity to some of the new “factors of production” in the new economy such as knowledge (R&D) and the protagonists (students). Reaching an entrepreneurship-fostering environment at university to unleash its widely untapped entrepreneurial potential, can be summarized as the entrepreneurial university (EU). Entrepreneurship education (EE) in this context acts then as the tool to execute on this new mission.

4.3.1 Definition of Entrepreneurship Education

Similar to the concept of entrepreneurship, a single definition of EE is far from being settled. The life-long learning platform of the European civil society for education describes EE as the “content, methods and activities that support the development of motivation, competence, and experience that makes it possible to implement, manage and participate in value-added processes”.[244] According to Sarasvathy and Venkatamaran’s as well as Kuratko’s views on EE, it can also transcend towards a more democratic concept, in terms of the new protagonists on the one hand, and on the other hand its broadened domain of application. Engel addressed this democratic and broader application too: “It is understood that entrepreneurship is a life skill with broad applicability. It is important and helpful to many beyond those who choose to pursue entrepreneurship as a career. Like mathematics, it is broadly relevant and not limited just to those who choose to become mathematicians.”[245]

4.3.2 Entrepreneurship as a life skill

Hence, this perception of entrepreneurship to be a life skill, supposed to be taught to everyone, is also displayed in the “Entrepreneurship 2020 Action Plan” by the European Commission: “Whether or not they go on to found businesses or social enterprises, young

[242] ibidem
[243] Cf. Drucker (1985), n.pag.; Etzkowitz, H. (2008), 683 f
[244] Mattl (2017), available online at http://lllplatform.eu/news/new-approach-entrepreneurship-education-paradigm-shift-eu/ request of 15th February 2019
[245] Engel (2016) pp. 3 ff

people who benefit from entrepreneurial learning, develop business knowledge and essential skills and attitudes including creativity, initiative, tenacity, teamwork, understanding of risk and a sense of responsibility. This is the entrepreneurial mindset that helps entrepreneurs transform ideas into action and also significantly increases employability."[246] Further they state that "Entrepreneurship is a key competence in the European Framework"[247].

4.3.3 Born or made debate

While the debate around the question whether or not entrepreneurship can be taught is still alive, the evidence is strong[248] that more and more universities rather support Kuratko's stance when he claims: "the question of whether entrepreneurship can be taught is obsolete". From his perspective there are more important questions to be asked as "what should be taught, and how should it be taught?"[249]

The scholars have settled on the agreement that entrepreneurship should be taught differently from courses in a traditional manner such as management.[250] "Entrepreneurship must be taught entrepreneurial"[251] said Kent. An explanation followed by Plaschka and Welsch: "As the criticisms of business education show, current analytical-functional quantitative, tools-oriented, theoretical, left-side of the brain, overspecialized, compartmentalized, approaches are not adequate to begin solving ill-defined, unstructured, ambiguous, complex multidisciplinary, holistic, real-world problems."[252]

In order to address the before mentioned "what and how EE should be taught", we elaborate on a theory describing different approaches to execute on entrepreneurship education.

4.3.4 Neck and Greene's theory

Neck and Greene's theory suggest that when educators teach entrepreneurship, they can do it in three different ways, and these ways are termed 'worlds': Entrepreneur world, process world, and the cognition world. Further, they suggest that educators either only teach in one, in two, or in all three of the worlds at the same time.

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[246] European Commission (2013), pp. 6 f
[247] ibidem
[248] Sirelkhatim/Gangi (2015), pp 2 f.
[249] Kuratko (2005), pp. 580 f
[250] Cf. Neck/Green (2011), pp. 66 ff
[251] Cf. Kent (1990)
[252] Plaschka/Welsch (1990), pp. 61 f

4.3.4.1 Three worlds view of teaching entrepreneurship

The entrepreneur world focuses on the traits entrepreneurs possess[253]. And in a way, students "that are taught in this way see entrepreneurship as a box in which they either fit in or not"[254]. Hence, they are focused whether they bring along the "correct" traits. Neck and Greene noted that these characteristics respectively traits are hardly to reach, almost attributed to a superhero

The process world deals with the journey from the initial start of a business over the growth time until a potential exit of the business. This world is dominated by planning, prediction and using reliable models to decrease risk. The drawback of this world suggested by Neck and Greene is "that entrepreneurship is neither linear nor predictable, but it is easy to teach as it were"[255].

The cognition world presents the most recent type of approach. According to Neck and Greene, it made its way into the classrooms around the mid-1990s.[256] Central to this world is how people think entrepreneurially and hence it recognizes "the great diversity in the ways people can be entrepreneurs". Further, includes the decision to become an entrepreneur and "how to understand that decision"[257].

4.3.4.2 Process vs. method

In the same publication, they proposed a fourth world as a new frontier in this domain of research. Challenging the notion of entrepreneurship education perceived as a process towards a notion of entrepreneurship education as a method. A process which consists of "identifying an opportunity, understanding resource requirements, […] planning and implementing"[258]. A process usually implies to arrive at a predefined and predictable destination. However, entrepreneurship is not predictable. A method, on the other hand uses a "body of skills or techniques, therefore teaching entrepreneurship as a method simply implies that we are helping students understand, develop, and practice the skills and techniques need for productive entrepreneurship. […]. It goes beyond understanding knowing, and talking; it requires using, applying, and acting." They also suggest that "learning a method may more important than learning content".

[253] Cf. Neck/Green (2011), pp. 55 ff
[254] Neck/Green (2011), pp. 58 f
[255] Neck/Green (2011), pp. 60 f
[256] Cf. Neck/Green (2011), pp. 60 f
[257] Neck/Green (2011), pp. 60 f
[258] Neck/Green (2011), pp. 61 ff

What they call the method world or entrepreneurship as a method includes four dimensions, starting a business, serious games and simulations, design-based learning and reflective learning as follows:[259]

- Starting a business: A course that is addressing this dimension is offered a Babson College. Its focus is described as “opportunity recognition, resource parsimony, team development, holistic thinking and value creation through harvest”[260].
- Serious games and simulations: Games provide “learning, play and participation while exposing students to real challenges in a virtual world”[261]. At Babson they developed to “support learning about how entrepreneurs think under conditions of risk, uncertainty and unknowability”[262].
- Design-based Learning: Simon stated that “entrepreneurship is an applied discipline, yet we are teaching and researching as if it was part of the natural sciences”[263]. The two scholars, Neck and Greene, asserted in this context that entrepreneurs “think and act similar to designers”[264]. Design, a process based on divergence, convergence, requiring skill in observation, synthesis, searching and generating alternatives, critical thinking, feedback, creativity, and problem-solving […]”[265]. Eventually, Simon suggested that “applied disciplines are better served by design-based curricula”[266].
- Reflective Learning: Reflection, as they suggest, considers an “experience that has happened and tries to understand or explain it, which often leads to insight and deep learning - or ideas to test on new experiences”[267]. Problem-solving and working under conditions of high uncertainty and the occurrence of perplexing experiences, in particular, require reflection.[268] Hence, it not a surprise that reflection, as they state, is a core element of EE. As a result, it should not be a surprise that reflection is an integral component of entrepreneurship education and also a way of practicing entrepreneurship.

As a compelling form to describe the notion of teaching entrepreneurship as a method and highlighting its applicability in the “real world”[269] it could be boiled down to the following statements: “The method is people dependent but not dependent on type of person. […]” Learning a method, we believe, is often more important than learning

[259] Cf. Neck/Green (2011), pp. 61 ff
[260] Neck/Green (2011), pp. 64 f
[261] ibidem
[262] ibidem
[263] Simon (1996), n.pag
[264] Neck/Green (2011), pp. 65 f
[265] ibidem
[266] ibidem
[267] Neck/Green (2011), pp. 65 f
[268] Cf. Neck/Greene (2011), pp. 65 f
[269] Cf. Neck/Greene (2011), pp. 66 f

specific content. In an ever-changing world, we need to teach methods that stand the test of dramatic changes in content and context."[270]

[270] Neck/Greene (2011), pp. 68 f

5 Decision-making models

The way people form decisions to execute a certain behavior has been a subject matter of research far beyond the realm of economic offerings. In fact, the application of decision-making models even found to study entrepreneurial intention. Since we do not commit to creating a venture purely unconsciously and by mere reflex, these decision models attempt to identify so-called predictors of certain behavior. We rather respond to and process, for example, conditions and cues from our environment to form a decision.[271]

At the end of the 1980s, literature emerged significantly to conceptualize entrepreneurial intentions[272]. Most commonly used in this research domain is the framework of the theory of planned behavior (TBP), which suggests that intention is the main predictor of executing a certain behavior.[273]

5.1 Theory of planned behavior

The TPB suggests that antecedents of intention are the attitude towards behavior (AtB), subjective perceived (SN) behavioral control (PBC).[274] In turn, the antecedents of those three appear are illustrated in the decomposed version of TPB, termed the decomposed theory of planned behavior (DTPB) see figure 21[275] What the model below does not depict is the interdependency between SN, PBC, and AtB. Further, indicated by the direct connection (the arrow in figure 21) between PBC and behavior, behavior is directly influenced by PBC and hence a direct predictor.

In other words it suggests that, " […] that once individuals decide to adoptbehaviors that they believe they will be able to control (PBC), either because they have received specific training in a particular field or because they feel close support (SN and AtB) for being able to perform thatbehavior, or even they have experience or role models, the final decision to engage in a particularbehavior is the result of a rational process that follows a logical sequence in which thebehavioral choices are considered, the consequences or outcomes of each are evaluated, and a decision of whether or not to act is made".[276]

[271] Cf. Krueger JR/Reilly/Carsrud (2000), pp. 1 f
[272] Cf. Kautonen/van Gelderen/Fink (2017), pp. 655 f
[273] Cf. Kautonen/van Gelderen/Fink (2017), pp. 655 f; Cf. Ajzen (1991), pp 179 ff.
[274] ibidem
[275] Cf. Taylor/Todd (1995), pp. 137 ff; Ajzen/Fishbein (2005), pp. 179 ff
[276] Cf. Sancho/Martin Navarro/Ramos-Rodriguez (2018), pp. 2 f; Cf. Whidya (2017), pp. 475 ff

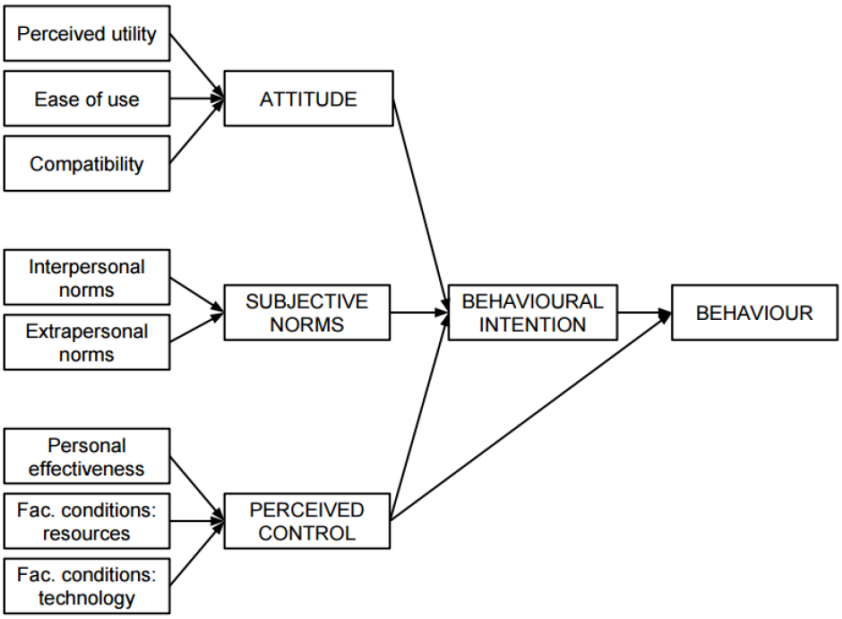

Figure 21: Decomposed theory of plannedbehavior.

Let us elaborate on the three antecedents of intention:[277]

- Attitude towards behavior (AtB): “It refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behavior in question.”
- Subjective Norm (SN): “It refers to the perceived social pressure to perform or not to perform the behavior.”
- Perceived Behavioral Control (PBC): “refers to the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles.”

Let us elaborate on the predictors of the before mentioned three determinants of behavior:[278]

Attitude towards behavior is predicted by:[279]

- Perceived usefulness (utility): “Refers to the degree to which an innovation provides benefits which supersede those of its precursor and may incorporate factors such as economic benefits, image enhancement, convenience and satisfaction […]”.
- Complexity (ease of use): “Represents the degree to which an innovation is perceived to be difficult to understand, learn or operate […]”.

[277] Cf. Ajzen (1985), pp 188 f
[278] Cf. Taylor/Todd (1995), pp. 151 ff
[279] ibidem

- Compatibility: “The degree to which the innovation fits with the potential adopter’s existing values, previous experiences, and current needs.”

Subjective Norm is predicted by:[280]

- Interpersonal norms (influence of key persons such as peers or superior): It refers to the perceived social pressure and respectively the approval to exert a certain behavior by interpersonal relations.
- Extra personal norms (such as media, social networks, etc.): It refers to the perceived social pressure and respectively the approval to exert a certain behavior by extra personal relations.

Perceived behavioral control is predicted by:[281]

- Self-efficacy (Personal effectiveness): “[…] related to perceived ability”[282]. It is the belief in one’s own capability to master a certain task. Bandura put it as follows: “An efficacy expectation is a conviction that one can successfully execute the behavior required to produce the outcomes”[283].
- Facilitating resources: “[…] resource factors such as time and money”[284].
- Facilitating technology (conditions): “[…] technology or compatibility issues that may constrain usage respectively adoption”[285].

As a side, the technical terminology that often used in the explanations on the antecedents above stems from the model’s main field of application, such as adaption of technology and innovation in the early years of its emergence.

5.2 Shapero’s Entrepreneurial event

Another model describing in particular predictors of the entrepreneurial intent was developed by Shapero termed ‘Shapero’s Entrepreneurial Event’ (SEE). Scholar’s such as Krueger and van Gelderen state that “the two models overlap to a great extent, with Shapero perceived desirability and perceived feasibility corresponding to Ajzen’s attitudes and PBC, respectively”[286].

Further, it says that “studies of business start-up intentions that apply a pre-existing theoretical framework have adopted either the TPB or Shapero’s entrepreneurial event

[280] Cf. Moons/Pelsmacker (2015), pp. 6125 f; Cf. Braim/Rickly/McCable/Gadi, (2016), pp. 22 f
[281] Cf. Taylor/Todd (1995), pp. 151 ff
[282] ibidem
[283] Bandura (1978), pp. 141 f
[284] Taylor/Todd (1995), pp. 152 ff
[285] ibidem
[286] Kautonen/van Gelderen/Fink (2017), pp. 656 ff; van Gelderen/Brand/van Praag/Bodewes/Poutsma/van Gils (2008), pp. 538 ff; Cf. Krueger JR/Reilly/Carsrud (2000), pp. 411 ff

model”[287]. And eventually, “in a direct comparison of the two models, Krueger, Carsrud and Reilly found both to be approximately equal in terms of predictive power”[288].

Hence, TPB presents the best-suited model for our research. We learned that the predictors of the SEE are overlapped by TPB and rated the same regarding predictive power. Further, “because of its consistent and detailed specification; the great volume of research across disciplines dedicated to applying, criticizing, and advancing the model (and the opportunity to compare, and thus cross-validate, findings with those found in a range of other research domains”[289].

Further elaboration on decision-making models and in particular on the TPB exceeds the scope of this thesis. At this depth of the understanding of decision-making models such as the TPB and SEE, it can be stated that in order to encourage the foundation of new businesses through fostering the entrepreneurial intent, university policymakers are called upon to positively influence perceptions on feasibility and desirability. Hence, in terms of TPB, influencing in particular AtB, PBC and SN.[290]

After providing basic understanding through the literature review on the three domains such as customer journey, decision-making models and entrepreneurship education we will move to the research design of this thesis.

[287] Kautonen/van Gelderen/Fink (2017), pp. 656 f; Schlaegel/König (2012)
[288] Cf. Krueger/Reilly/Carsrud (2000), pp. 411 ff
[289] Kautonen/van Gelderen/Fink (2017), pp. 657 f
[290] Cf. Krueger/Reilly/Carsrud (2000), pp. 411 ff

6 Research Design

Building from the literature review's insights, this chapter elaborates on the decision-making process towards the final research design applied in this thesis. We shed light on the background of research approaches and the motives for the research method used in this thesis. Let us first elaborate on the two paradigms that dominate research.

6.1 Paradigms in research

We already learned about paradigms in management thinking in a previous chapter. Paradigms, or as Creswell[291] replaces it with the term 'world view', represent a general philosophical orientation, or "a basic set of beliefs that guide actions"[292]. Based on the adopted paradigm, a researcher chooses either qualitative, quantitative or mixed research methods.[293] Let us first elaborate on the different paradigms in research.

Widely discussed paradigms in literature are the following four: Postpositivism, constructivism, transformative and pragmatism.[294]

- Postpositivism: Represents the "traditional form of research", by some scholars conceived as the "scientific method", or "doing science research"[295]. "[...] in the scientific method - the accepted approach to research by postpositivists - a researcher begins with a theory, collects data that either supports or refutes the theory and then makes necessary revisions and conducts additional tests"[296]. Further, "Data, evidence and rational considerations shape knowledge"[297].
- Constructivism or social constructivism: "[…] believe that individuals seek understanding of the world in which they live and work. Individuals develop subjective meanings of their experiences - meanings directed toward certain objects or things. These meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas."[298]
- Transformatism: "While there is no uniform body of literature describing this worldview" the following can be said: "A transformative worldview holds that

[291] Creswell (2014), pp. 5 f
[292] Guba (1990), p. 17 f
[293] Cf. Creswell (2014), pp. 5 f
[294] ibidem
[295] Creswell 2014), pp. 7 f
[296] ibidem
[297] ibidem
[298] Creswell 2014), pp. 8 f

research inquiry needs to be intertwined with politics and a political change agenda to confront social oppression at whatever levels it occurs".[299]

- Pragmatic: "[…] For many, pragmatism as a worldview arises out of actions, situations, and consequences rather than antecedent conditions (as in postpositivism)"[300]. "Instead of focusing on methods, researchers emphasize the research problem and use all approaches available to understand the problem"[301].

The ffigure 22 below illustrates the interconnections of world views, design, research methods, and research approaches.[302]

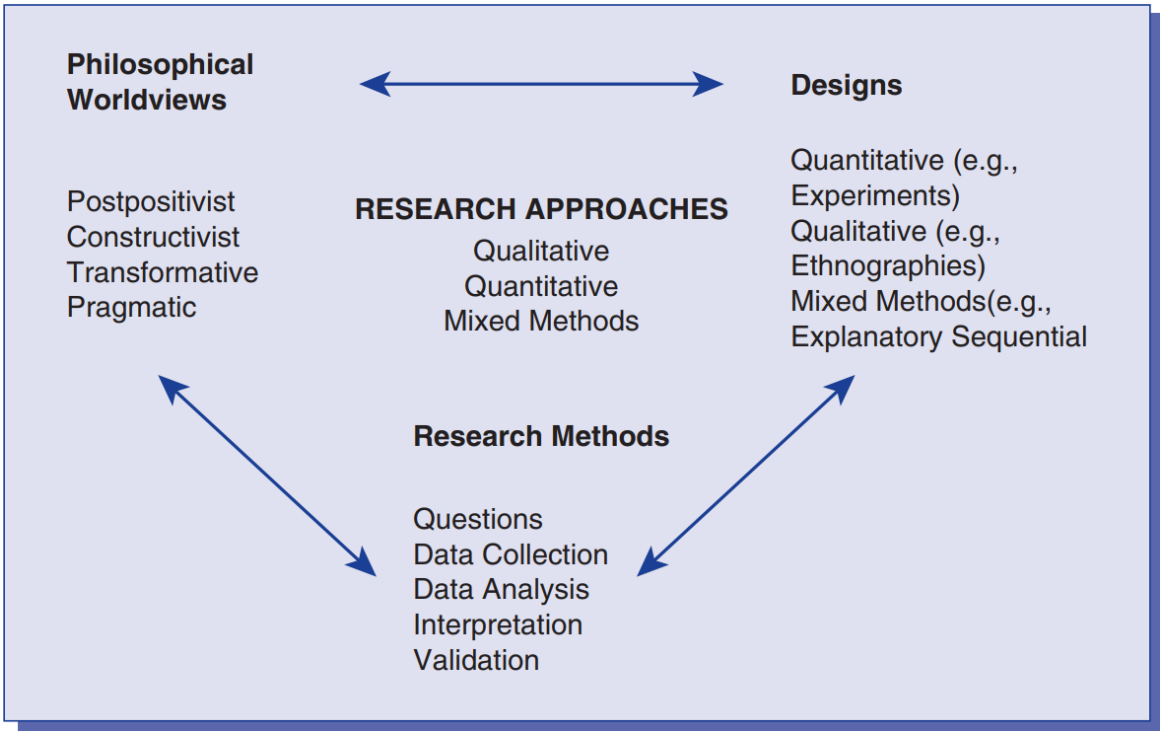

Figure 22: Interconnections of philosophical worldviews, designs, research methods and research approaches

[299] Mertens (2010), n.pag.
[300] Creswell 2014), pp. 10 f
[301] ibidem
[302] Creswell 2014), pp. 5 f

Thompson uses the term interpretivism, which can be interpreted as a comprising term of the paradigms of constructivism, pragmatism and transformatism. This can be largely derived and concluded from his summary grid in figure 23.

Positivism	Interpretivism
Relationship between society and the individual	
Society shapes the individual - *'Society consists of 'social facts' which exercise coercive control over individuals' (Durkheim).* People's actions can generally be explained by the social norms they have been exposed to through their socialisation, and their social class, gender and ethnic background.	Individuals have consciousness and are not just puppets who react to external social forces as Positivists believe. Individuals are intricate and complex and different people experience and understand the same 'objective reality' in different ways and have individual reasons for their actions.
General focus of social research	
The point of research is to uncover the laws that govern human behaviour, just as scientists have discovered the laws that govern the physical world. Sociologists should use similar methods and approaches to the natural sciences. Prefer quantitative methods which allow for the researcher to remain detached from the respondents.	The point of research is to gain in-depth insight into the lives of respondents, to gain an empathetic understanding of why they act in the way that they do. Sociologists need to use non-scientific methods to see the world through the eyes of the actors doing the acting. Prefer qualitative methods which allow for close interaction with respondents.
Preferred research methods	
Quantitative **Official Statistics** **Social Surveys** **Questionnaires** **Structured Interviews** Require research to be valid, reliable and representativeness	**Qualitative** **Personal Documents** **Participant Observation** **Unstructured Interviews** Prepared to sacrifice reliability and representativeness for greater validity
Key Terms	
Objective **Detachment** **Trends/ Comparisons** **Correlations/ 'Causes'** **Generaliseablity** **Scientific**	**Subjective** **Interaction/ Involvement/ Rapport** **Feelings/ Verstehen/ Empathy** **Thick Description** **Individual Motives** **Humanistic**

Figure 23: Positivism and interpretivism summary grid

Representatives of the postpositivistic respectively positivistic (these expressions are used interchangeably in this thesis) paradigm suggest that sciences such as sociology, the science of socialbehavior, should make use of the same paradigm which is used to study natural sciences such physics, biology, etc.[303] In order to identify "laws that govern societies just as laws that govern the physical world"[304].

To orient oneself towards the appropriate approach respectively adopt a different paradigm, the questions in the table below can help.[305] 'Linear analytics methods' in this context correspond to the world views of positivism respectively post-positivism and 'Design Thinking' can be assigned to the other before mentioned world views.

Question	Design thinking is appropriate if...	Liner analytics methods may be better if...
Is the problem human centred?	Deep understanding of the actual people (users) involved is both possible and important	There are few human beings involved in the problem or the solution
How clearly do you understand the problem itself?	We have a hunch about this problem / opportunity, and we need to explore to understand further	We understand the problem clearly and are sure we're solving the right one
What's the level of uncertainty?	There are many unknowns (large and small) and historical data is unlikely to help us	The past is a good predictor of the future
What's the degree of complexity?	There are many connecting and interdependent facets of the problem; Its hard to know where to start	The path to solving the problem is clear, and analytical methods have succeeded in solving similar problems in the past
What data is already available to you?	There is very little relevant data to analyse	There are several clear sources of analogous data
What's your level of curiosity and influence?	You are excited to explore more and can get a group of people willing to help you	The problem feels routine, and existing processes and systems must be followed

Figure 24: Adapted from "Designing for Growth". Questions to check whether Design Thinking or analytical methods are appropriate.

Our research involves humans to large extent, respectively they are the subject matter of our research. Further, since we transfer the customer journey, a tool used in Design Thinking into the field of social science, we can approve that these questions in figure 24 confirm our view and research approach taken.

Let us shed some light on the research approaches that are built on and connected the paradigms.

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[303] Cf. Thompson (2015) available online at: https://revisesociology.com/2015/05/18/positivism-interpretivism-sociology/ request of 19th Februray 2019

[304] Thompson (2015), available online at: https://revisesociology.com/2015/05/18/positivism-interpretivism-sociology/ request of 19th Februray 2019

[305] Liedtka/Oglivie (2011), pp. 12 f; Martin (2016), available online at https://de.slideshare.net/craigrmartin/designchain-businessbydesign-workshop-pack-for-iiba request of 25th March 2019.

6.2 Research approaches

Research approaches, as figure 22 illustrates, function as the connecting parts between paradigms, research designs and the specific research methods. The literature distinguishes here between three research approaches such as quantitative, qualitative, and mixed ones. In short, while quantitative approaches observe and seek information in a numeric form (e.g.: surveys), qualitative approaches draw interpretations from hardly quantifiable information such as emotions, opinions, and values which can stem from an in-depth interview.[306] Mixed research approaches present merely a combination of the two before mentioned.

Quantitative research has a long tradition and its history dates back to the late 19th century.[307] Representatives of the post-positivistic paradigm used this research approach.[308] Qualitative research on the other hand only gained attention from the late 1990s onwards. The historic origin stems from sciences such as anthropology, sociology, and humanities.[309] Qualitative research is associated with paradigms such as constructivism, transformatism, and pragmatism.

6.2.1 Approaches and paradigms in entrepreneurship research

The history of qualitative and quantitative research approaches and its underlying paradigms explains the chronical differing emergence of the paradigms in the field of entrepreneurship education and in specific, entrepreneurial Intention (EI). Approaches based on positivistic paradigms dominated the early days of research on EI. However, till today according to scholars such Fayolle, "[…] almost all empirical papers use positivist methodologies. The EI field of research currently offers little room and scope for humanistic approaches that see the research as value-based and give central place to human beings, human meaning and human actions."[310] The term 'humanistic approaches' it is interchangeably used with interpretivism (constructivism, transformatism, and pragmatism).

This reconciliation of positivism and humanism in social sciences seems to have similarities to what Martin referred as the paradigm shift respectively adoption in management thinking, regarding the opposing usage of analytical and intuitive thinking. If not interesting enough, the adoption of a new paradigm, both in social sciences as well as in the realm of business also emerged roughly at the same time (late 1990s).

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[306] Cf. Creswell (2014), pp. 18 f
[307] Cf. Creswell (2014), pp. 12 f
[308] ibidem
[309] Cf. Creswell (2014), pp. 13 f
[310] Fayolle/Linan (2015). pp. 18 f

6.2.2 Stage of research in a broader context

To gain a comprehensive understanding at which stage of the research this thesis addresses, we refer to the methodology of Design Thinking, in its shape of a double diamond, see figure 25 and 26. Allegedly like no other methodology as Design Thinking, better represents and incorporates the guiding principles of new management paradigm.

Initially developed by the UK Design council it comprises the methodology of DT into two diamonds, each consisting of two stages[311]. While the first diamond, representing the first two stages ('Discover' and 'Define'), aims to identify the right problem to solve for (Problem definition), the subsequent diamond ('Develop' and 'Deliver') deals with the potential solution to the previously identified problem space. The shape of the double diamond should visualize the aim to diverge and subsequently converge the amount of information along the entire process. In the stage of 'Discover' the goal is to identify as much data in form of insights as possible, and hence the potential problem area diverges. In the subsequent stage 'Define' we condense the vast amount of previously collected information and define the problem area, hence we converge towards a definition of the problem.

The first diamond helps you to design for the right thing, while the second helps you to design thing right. In order words, at the first two stages one settles on the right problem to solve and on the subsequent two one design solution that addressed the right problem. Scholar Nessler integrated this thought and a few more in his adapted version of the blue diamond which and provides a comprehensive process which helps communicate the stage of a research project.[312]

This thesis operates in the first stage ('Discover') and seeks diverging thinking and hence seeks as many insights as possible. At the end of the stage, after a thorough primary and secondary research we end up with unstructured findings. Hence, our goal is not to form meanings and conclusion out of the collected data but to embrace a variety of inflow and of highly diverged and diverse areas.

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[311] Cf. UK Design Council (2007), available online at: https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond request of 19th February 2019.
[312] Nessler (2016), available online at https://www.dannessler.com/intro-process request of 19th February 2019

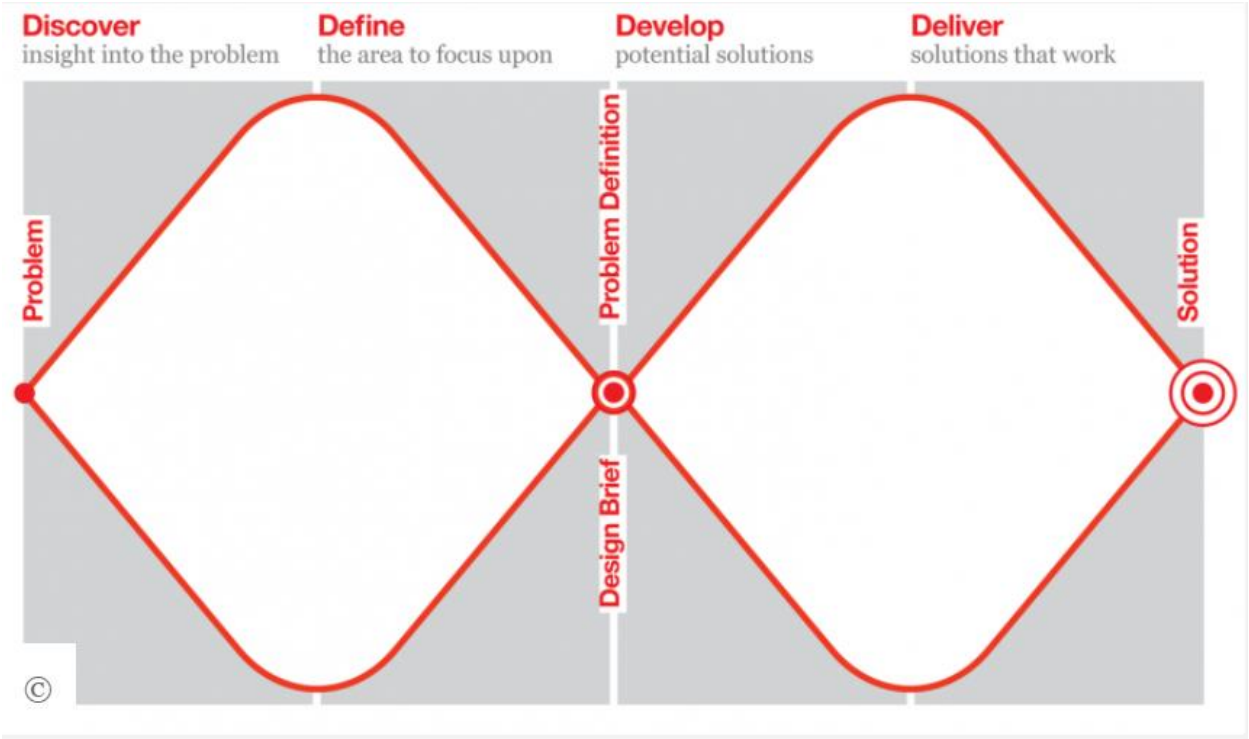

Figure 25: Double diamond illustration of the design process by the UK Design Council

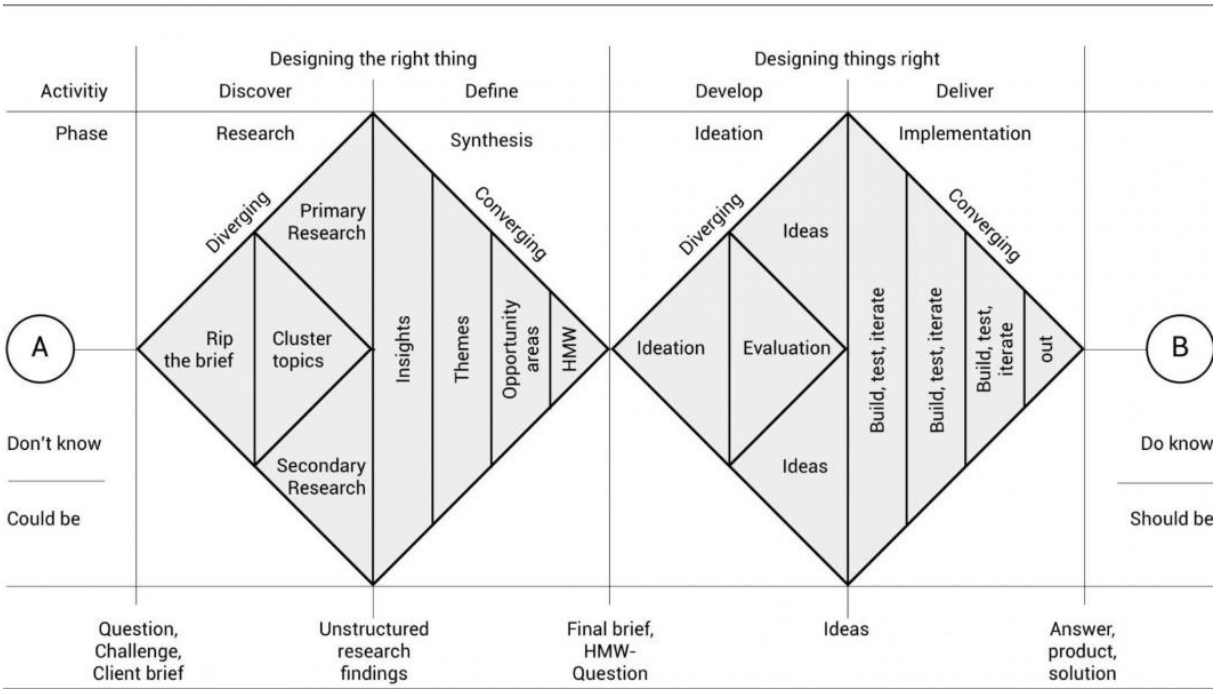

Figure 26: Nessler's revamped Double Diamond

This movement along the stages can also be described by a movement through four quadrants, which is depicted in the ‘design approach’, presented in Stanford Social Innovation Review, in figure 27[313]. The movement is indicated by the dotted line and in each quadrant accompanied by a guiding question.

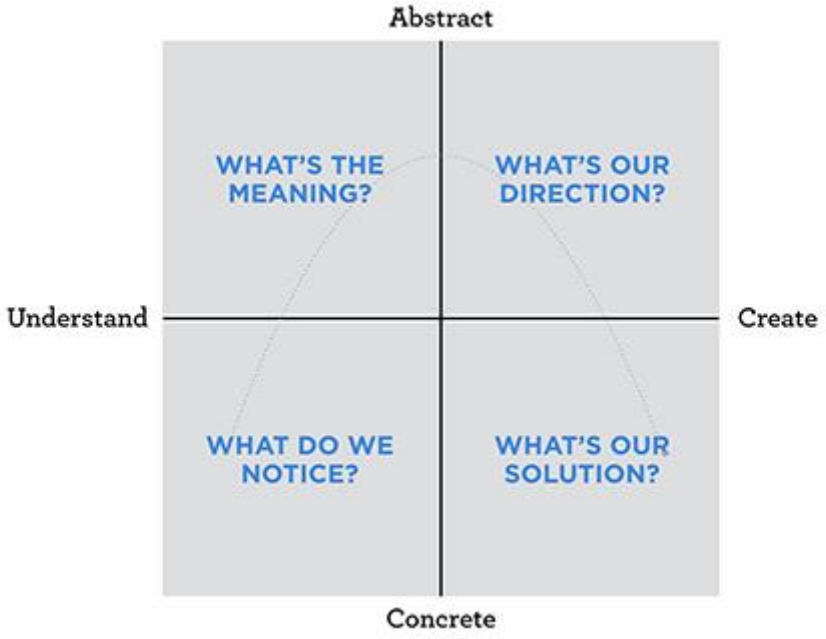

Figure 27: A framework for a design approach. Throughout a project we move through four quadrants indicated by the dotted line. Accompanied by four guiding questions.

Let us now elaborate on the research approach used in this thesis, namely qualitative research approach.

[313] Cf. Both (2018), assessed 19th February 2019: https://ssir.org/articles/entry/human_centered_systems_minded_design#

6.3 Qualitative research approach

By definition, qualitative research is the strategy for systematic collection, organization, and interpretation of textual information[314]. It becomes more tangible when putting in comparison to the other approaches, see figure 28.[315]

Comprehensive view of the differences between the research approaches, another comparison, presented by the Yale Global Health Leadership Institute, is illustrated in figure 26.[316]

To complement a clear image of the difference between the research approaches, we formulate for approach research questions. The source stems from global health leadership institute at Yale University:[317]

- Quantitative approach: What proportion of people with epilepsy stop taking meds for three consecutive days in a six-month period?
- Qualitative: How does epilepsy shape the life of patients?

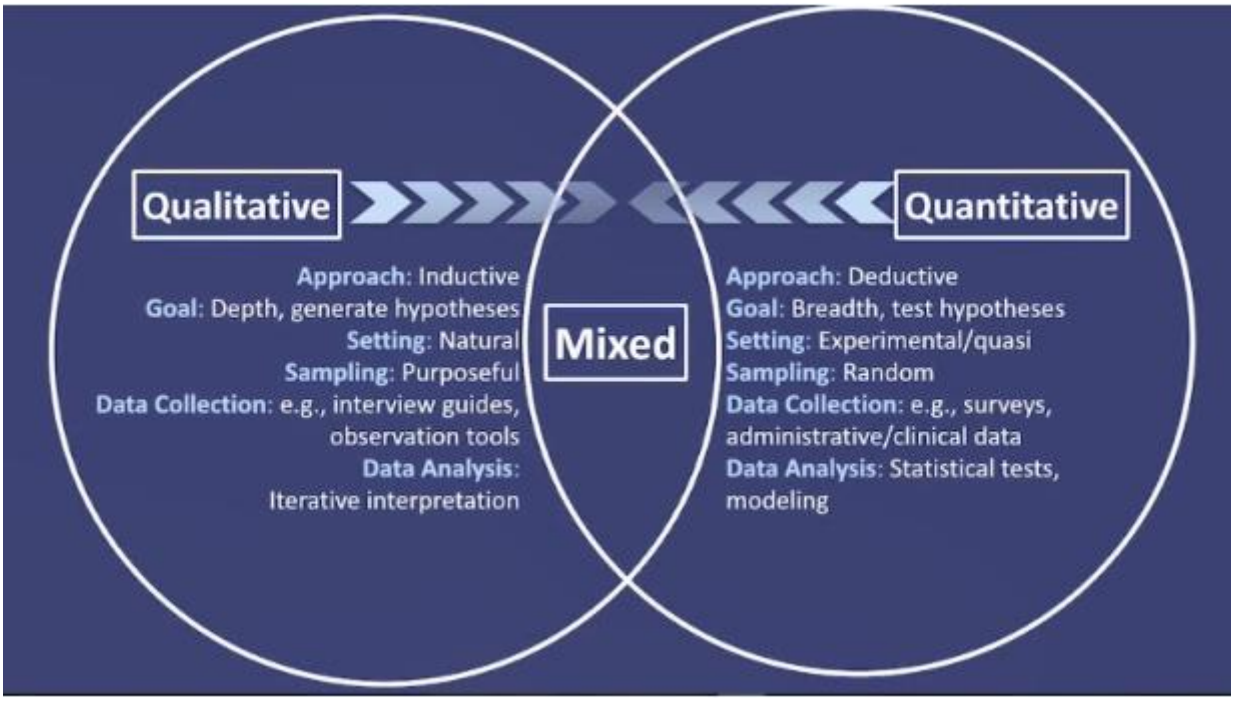

Figure 28: Comparison of qualitative and quantitative research method the properties such as approach, goal, setting, sampling, data collection and data analysis from Yale Global Health Leadership Institute

[314] Cf. Patton (2002)
[315] Cf. Yale Global Health Leadership Institute (2017) assessed 19th February 2019: https://nurseamygdala.wordpress.com/2017/07/16/what-are-the-main-features-that-differentiate-qualitative-research-from-quantitative-research/
[316] ibidem
[317] ibidem

Adapted to our field of research it could be the following:

- Quantitative: What proportion students that interacted with touchpoint X drop out of the entrepreneurial journey?
- Qualitative: How does the interaction with touchpoint X influence entrepreneurial intent of participants?

6.3.1 Qualitative research designs

The research design demonstrates types of inquiry within research approaches providing specific direction for procedures.[318] Some commonly used designs are listed shortly described in the table 1 below:[319]

Table 1: Qualitative research designs adapted from Creswell (2014)

Narrative research	"[…] studies the lives of individuals […]. […] is often retold and restored by the researcher and into a narrative chronology. Often at the end, the narrative combines views from the participant's life with those of the researcher's life in a collaborative narrative."
Phenomenology	[…] describes the lived experiences of individuals about a phenomenon. This description culminates in the essence of the experiences for several individuals who have all experienced the phenomenon."
Grounded theory	Theory building based on empirical data grounded in the views of individuals. It usually involves multiple cycles of data collection, theory building, refinement and adaption.
Ethnography	"[…] studies shared patterns the shared patterns ofbehaviors, language, and actions of an intact cultural group in a natural setting over a prolonged period of time. Data collection often involves observations and interviews."
Case Study	"[…] especially evaluation, in which the researcher develops an in-depth analysis of a case, often a program, event, activity, process, or one or more individuals."

Let us now take a look at the third component in the framework: The research methods.

6.3.2 Qualitative methods

The third component in the framework is the specific research method, involving the stages of data collections, analysis, and interpretation.[320] Table 2 presents an overview.

[318] Cf. Creswell (2014), pp. 11 ff
[319] Cf. Creswell (2014), pp. 13 ff
[320] Cf. Creswell (2014), pp. 17 f

Table 2: Quantitative and qualitative research methods

Quantitative Methods	**Qualitative Methods**
Pre-determined	Emerging methods
Instrument based questions	Open-ended questions
Statistical analysis	Interview data, observation data, document data and audio-visual data
Statistical interpretation	Text and image analysis
Performance data	Themes, patterns, interpretations

After the introduction to the basic traits of different research designs, the following sub-chapter elaborates on the design we applied in our thesis.

6.4 Applied research design – modified grounded theory

The research design used for this thesis is based on the grounded theory (applying the approach of the coding paradigm by Strauss & Corbin)[321]. Qualitative research design, is used for qualitative research methods and traditionally applies inductive reasoning is its form of logic.[322] The design is based on the grounded theory, however excluding its last step: Theory building. Hence, it stops stop at the so-called theoretical saturation, we elaborate in sub-chapter 6.4.2.4 Theoretical saturation. Subsequently, instead of converging the data and continuing inductive approach to build a theory, we leave the entire collected data for another form of logic, namely abductive thinking, also known as abductive reasoning.

6.4.1 Integration of abductive reasoning

Introduced in chapter 3.4.4 A new competitive advantage, abductive reasoning unlike other forms of logic such as deductive reasoning and inductive reasoning, offers an evaluation of the data not based on pattern seeking. Differently put it suggests that it's not about "what's common from experiment to experiment, or the replicable peaks in the sequence, but by focusing on what is different, the oddball findings that stood out from

[321] Cf. Strauss et al (1990), n.pag.
[322] Cf. Scheu (2014), pp. 8 f

the others as unexplained and unexpected"[323]. In other words, we continue with data not based on proof and apply a so-called "logical leaps of the mind".[324] Hence, we abandon the reliability of outcomes for the achievement of outcomes containing high validity. Figure 29[325] illustrates the general process of the grounded theory and figure 30[326] the modified process applied in this thesis.

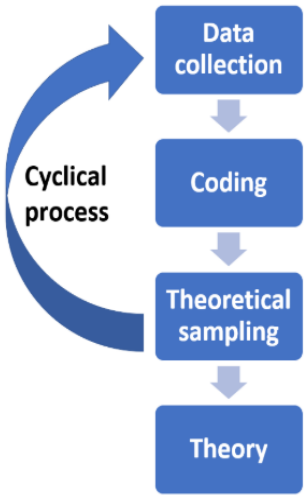

Figure 29: Process of Grounded Theory (suggested by MAXQDA)

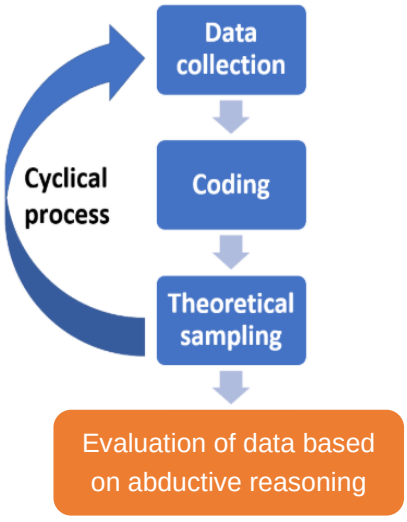

Figure 30: Research design of this thesis: Process of Grounded Theory combined with abductive reasoning. Modified illustration by the author of the thesis

[323] Martin (2009), pp. 37 f
[324] Martin (2009), pp. 27 ff
[325] MAXQDA (2019), available online at https://www.maxqda.com/grounded-theory-analysis request of 17th March 2109
[326] ibidem (modified illustration by the thesis author)

The research design can hence be illustrated by following modified illustration, figure 31:

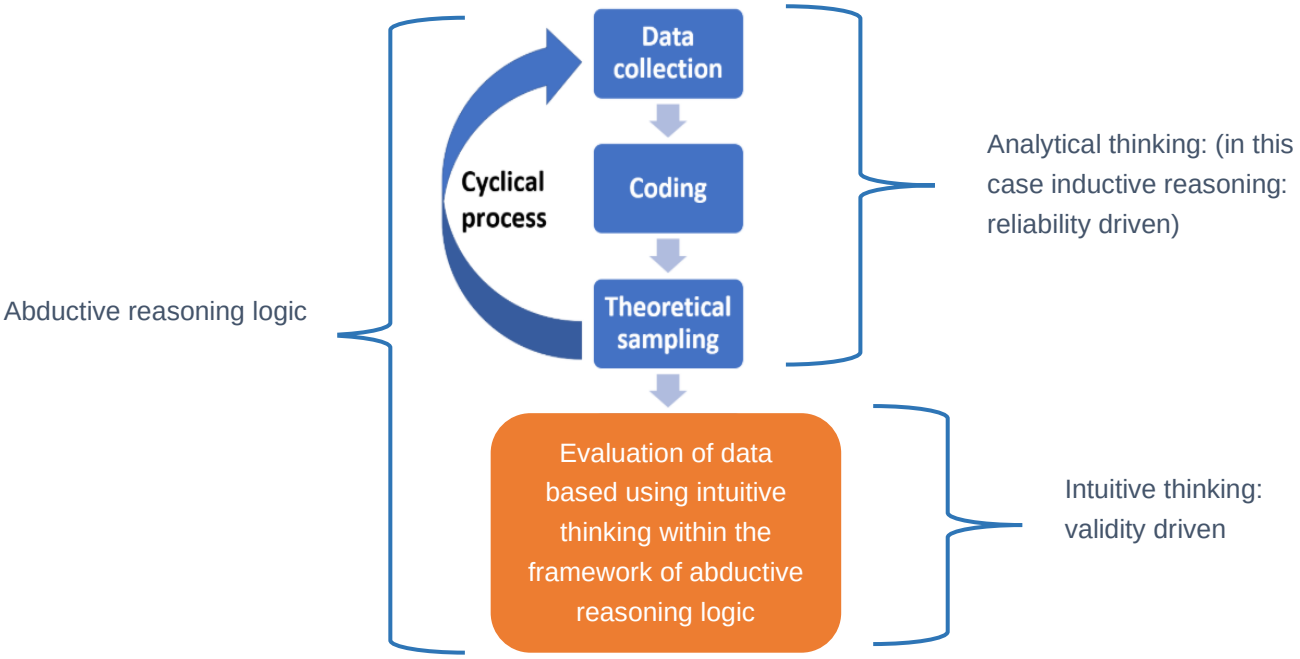

Figure 31: Research design in this thesis: Process of Grounded Theory combined with abductive reasoning as applied. Modified illustration by the author of the thesis

As such, abductive reasoning facilitates between reliability and validity seeking methods respectively between analytical and intuitive thinking.[327] Hence, abductive thinking sits right between the past-data-driven world (analytical thinking) and the knowing-without-reasoning world (intuitive thinking).[328]

6.4.2 Design specifications

This sub-chapter leads through the major design specification of our research design such as the setting, sampling, scope, theoretical saturation, and the interview guideline.

6.4.2.1 Setting

Since the intentions of the questions, the building of trust between the interviewer and the respondent and the flow of conversation, can hardly be conveyed and maintained digitally (e.g.: in form of a video-chat or a qualitative survey), we concluded that a

[327] Martin (2009), pp. 26 f
[328] ibidem

personal presence of the interviewer is indispensable for generating vivid personal storytelling.

Another part of the argument for the personal presence in a one-to-one setting is the ability to suddenly pick up on words mentioned by the interviewee that can reveal some valuable insights, respectively being in control of the conversation's direction on the spot. As we record the entire interview, the presence of a note taker will not be necessary, which will foster a more intimate and comfortable setting. Before we detail on the interview guideline and question's intentions, let us frame the sample and the scope.

6.4.2.2 Sampling

To provide a good breeding ground for a wide variety of insights to be generated, we believe seeking out for different viewpoints on entrepreneurial endeavour help increase these chances. Therefore, we divided the interview partners into three role categories: Participant, entrepreneur, and organiser.

- Participant: Students that interacted in some way with an entrepreneurship-related touchpoint (e.g.: event or course attendance or just website interaction with a relevant event, etc.). This participant did not (yet) commit to entrepreneurship ever before.
- Entrepreneur: A person that committed that officially found a company either during the time at university or after his graduation.
- Organizer: A person who provides entrepreneurship-related touchpoints (e.g.: organization of courses or events, professor, teaching assistant).

Please note: By the notion of entrepreneurship-related touchpoints, all touchpoints are involved that express a clear goal of addressing and enhancing entrepreneurship related skills and fostering the entrepreneurial mindset (based on the official description of the event or course. This notion only corresponds to the 18 identified touchpoints prior to the conducted interviews, which are linked to the 18 interview partner.

Especially the category of participants can differ to a high degree on where they are located on entrepreneurial student journey (ESJ), see figure 32. Some can be right before the committee and others just barely heard about this career and only own a vague idea in their head. To support the communication during the interview we used a self-designed so-called 'entrepreneurial journey'. The interviewee can freely locate themselves or the interacted touchpoints along the x-label. The course of the x-label and hence their location is determined by the needs that exist (participants), that have existed (entrepreneurs) and which touchpoint address these needs (organizer). The y-label indicates the changing degree motivation to proceed towards a potential commitment to start a business.

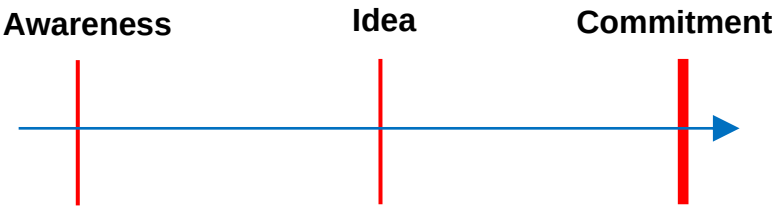

Figure 32: Entrepreneurial journey to support the communication during the interview. Awareness: Being aware of the career choice entrepreneurship. Idea: An idea for a potential entrepreneurial commitment has been defined. Commitment: The commitment to entrepreneurship has started. Author's own illustration.

In case of the category entrepreneur, to the interest of both parties in the interview, we looked for entrepreneurs who rather recently committed to entrepreneurship in order to be able to reproduce the stories with a satisfying degree of details. We framed the time span with a maximum of five years back to the commitment. To further foster the generation of versatile characteristics we seek a variety of entrepreneurs' factual characteristics such as the branch they are in, background and position (respectively area of responsibilities) in the venture, by their product's or service's degree of innovativeness and financial risk, etc. We believe the more heterogenous the distribution of these characteristics is, the more versatile the identifications of insights will be.

6.4.2.3 Scope

The planned scope involves five interview partners of each of the three interview categories. This will sum up to 15 interviews, whereas each is supposed to last at least 45 minutes. This minimum interview duration is reasoned by the character of the design. Since we aim for personal and vivid storytelling, a certain time of unfreezing respectively warm-up has to be allocated to build trust and create necessary vibes among the interview protagonists.

6.4.2.4 Theoretical saturation

The number of 18 interviews is a suggestion which eventually can increase or decrease depending on how many new identifications still emerge from the data. However, we expect the identifications by the last five interviews to decline steadily and this will signal to end the interview series. This point is called the theoretical saturation.

6.4.2.5 Interview guideline

In this sub chapter, we elaborate on the interview guideline's strategies for storytelling generation and the design of the questions.

Our design borrows largely from the in-depth and the problem-centered interview, which were described previously. John Lofland, a sociologist from the university of California

once described the in-depth interview very concisely and boiled it down to only two words: “Guided conversations”. This small phrase help understand the interplay during the interview. On the one hand, in order to generate a candid storytelling, the interview should possess to a high degree a conversational character, where the directions of the topics are not rigid. On the other hand, the respondent cannot drift off too far from the actual topic of interest. Hence, an interplay of openness and direction.

In the beginning of this chapter we dealt with the alleged contradiction of openness and direction of interview questions. Our design involves both. The next chapter details on it.

6.4.2.6 Strategies to generate storytelling and comprehension

The interview guideline can basically be viewed as two parts. The first part consists of a few questions characterized by a high degree of openness. The second part aims to give more direction to the topics of interest. These questions are framed with the key variables of the case adapted decomposed theory of plannedbehavior; the decision-making model elaborated in the literature review. The second part can also under the circumstance be left out if all the key variables turned up in the first part. Let us detail on the questions.

6.4.2.7 Question design

The questions design of the first part (shown in table 3) characterized by a high degree of openness, aims to address the, so called, free system of values. No hypothesis or influential words should be used to avoid any direction imposed. The following guideline is only addressed to the entrepreneur serves as demonstration. Since the guideline of participants and organizers only differ by the content of the question but not regarding the strategy and the goal, they are to be found in the appendix A.

Table 3: This guideline is specifically for the interviewee category entrepreneur. The main and sub questions of the first part which is characterized by a high degree of openness, accompanied by their intentions.

Main question **Sub questions**	**Intention and background**
How come you became an entrepreneur? Have you always had these personal traits?	Opening a wide spectrum of direction for the respondent to choose. Keeping the conversation flowing and avoid digging too deep
What excites about to being an entrepreneur? What are you are really surprised about?	Touching on a little more personal preferences and motivations and attitudes

What for the most part did influence your decision to become entrepreneurial active? What did change after attending/taking part at the event/course x?	Pointing the view towards changes of a time before and after the commitment.
Describe the time before and after founding your business? What did you learn? How do these learning influence your life? How did it influence your decision to become entrepreneurial active? What do you think is or was most important about the time before you made the decision?	Trying first to open up the spectrum of potential directions. And then, by the help of the sub questions, approaching the intention to gain insights on the interactions by addressing the potential learnings.
Referring to the figure of the pre-commitment entrepreneurial journey, how were the graphs like that express the level of motivation or fear you had? What touchpoints would you add along on the journey that caused these turns, peaks and lows? When did you decide for yourself to commit to entrepreneurship? What did help you along the journey? What did you hold you back respectively what was tough to overcome? What would you wish you have in some certain moments of time you had not? What you thankful for you owned or had acquired?	Here is deep digging on the agenda. Usage of the pre-commitment entrepreneurial journey. Supports the mutual communication. Based on the numerous turns the graph, it aims to trigger more detailed descriptions on the interactions. Further it fosters the memories and stories. The most part of sub question are again trying trigger the influencing interactions on the decision from a different direction.
What are moments you hardly will forget when you looking back at the time before the commitment? What was tough? What did push you forward?	Addressing the emotions involved.

The second part consists of the case adapted key variables of the decomposed theory of planned behavior (DTPB). As we learned from the literature review, the model suggests that the process of decision making is mainly influenced by three key variables. Our

approach is to frame the question to address each of these key variables. However, the application of the model suggests decomposing each of the key variables into more tangible and domain related expressions. Eventually, in total we decomposed seven key variables and hence, we formulated seven questions which are shown in table 4.

Table 2: Questions addressing the seven decomposed variables stemming from key variables of the decomposed theory of planned behavior.

Key variables	Decomposed variables	Question
Perceivedbehavioral control	Self-efficacy	To what extent do you believe you able to master the challenges that come along when becoming entrepreneurial active?
	Facilitating resources	How do you perceive the accessibility of resources (e.g.: time, money, equipment, infrastructure, mentorship etc.) that help perform your entrepreneurial activity?
Attitude towards behavior	Perceived relative advantage	How to do you perceive the advantages that come along when becoming entrepreneurial active? e.g.: economic benefits, freedom, reputation, fulfilment in work, personal development etc.
	Complexity	How do you perceive the complexity of tasks that come along when become entrepreneurial active?
	Compatibility	How do you perceive the type of tasks that come along, when becoming entrepreneurial active, match with your values, goals and strengths?
Subjective Norm	Interpersonal norms	How to you perceive the social pressure respectively approval exerted by friends, family and colleagues to execute a certainbehavior leading a potential commitment towards entrepreneurship?
	Extrapersonal norms	How do you perceive the social pressure respectively approval from extra personal norms (such as media, culture in general, etc.) colleagues to execute a certainbehavior leading

		a potential commitment towards entrepreneurship?

Once more, these are just guidelines and should help the researcher in addressing topics of interest to generate the most outcome. However, since we keep the “guided conversations” in mind there is no necessity to explicitly ask every single question. The goal is the generation of stories. In the next sub chapter, the process of the evaluation will be clarified.

6.4.2.8 Evaluation

Evaluation of the collected data takes place in three steps. First, the interviews are transcribed, insights codified and clustered by qualitative data analysis software MAXQDA and thirdly, the clustered insights are merged and organised into a so-called touchpoint contribution chart (TCC).

The process of the research grounded theory is applied in terms of the following: The insights respectively new codes stemming from the interview transcription is integrated in subsequent transcription interview.

6.4.2.9 Qualitative Data Analysis

In our research design, we implement the extracted themes, in our case e.g.: characteristics, modifications of questions) in the execution of the next data collection. Figure x indicates our procedure. To systematically collect all the relevant data and ensure its traceability, there is no way around to transcribe all the interview recordings. However, the transcription of interviews can be a very time-consuming process. Therefore, ensuring a quick, traceable, and organized process, the evaluation will be carried out by the support of a qualitative data analysis software (MAXQDA).

MAXQDA not only helps transcribing the recorded interviews but it also enables to code text passages of the identified characteristics and it even allows to directly code the audio tracks. Further, these so called codings can subsequently be organized in a code system of touchpoints that enables to trace back all the identified insights. This procedure is elaborated in more detail in the chapter 8 Data evaluation. After the data collection and evaluation, the final step is to classify the outcome.

7 Data collection

As we learned, a regular evaluation right after every interview is the proposed procedure, hence, it makes the data collection and its evaluation a circular (or iterative) endeavour). However, for the sake of keeping a clear overview, the data collection and its evaluation are elaborated in two separate chapters.

This chapter is divided into two main sub chapters compromising preparation and conduction. It basically points out the intentions and learnings starting from the finished interview guideline all the way to the first conversation being recorded and ready to for the evaluation.

Before we elaborate on that let's define the touch points and how

7.1 Establishment of interviewee and associated touchpoints

Each interview partner is associated with a distinct touch point in the first place that occurred at the ecosystem of Graz, University of Technology and listed in the table below. (interview partners remain anonymous).

The touchpoints as well as the associated interviewee were chosen without criteria or guideline. The only requirement for the touchpoint was a connection to Graz, University of Technology (this also involves either taking place at the campus as such or being organised within a cooperation with partners). Further, the requirements for the interviewee respectively interview categories can be found in sub- chapters *6.4.2.2 Sampling*

Table 5: Overview of the touchpoints and interview categories interviewed. E.g.: 'E' indicates the interview category 'entrepreneur', followed by the name of the touchpoint e.g.: "PhD_Tera"

E. PhD_Tera:	E. Product Innovation Project	E. Robocup (1)	E. Robocup (2)
O. Greentech Jam	O. Product Innovation Project	O. Science Park	O. Social Entrepreneurship Lecture
O. Startup Spritzer	O. Startup Journey	O. Venturepreneur-ship Aula	O. Wirtschaftsgeist
P. Product Innovation Project (1)	P. Product Innovation Project (2)	P. Product Innovation Project (3)	P. Forum Alpbach
O. Startup Journey	P. Startup Spritzer		

7.2 Preparation

This sub chapter walks through steps that start from the finished interview guideline until the beginning of the first conversation. Let us start with the arrangement of the interview.

To get the ball rolling, a short brainstorming resulted in a total of ten candidates for the three interview categories. As our research design suggest, we aimed to find interview candidates from category of “participants” heterogeneously located along the entrepreneurial journey, “entrepreneurs” differing in their backgrounds and organizers providing touchpoints differing in the needs they intent to meet. Since we expect to be able to add more candidates in the course of interviews, due to the learnings and the recommendations for further candidates gathered, there was no need to complete the number (15) of candidates for now.

7.2.1 Arrangement of the interview

The organizers were usually easily to be found by an online search for entrepreneurship related events and courses that are hosted by the universities themselves in Graz.

7.2.1.1 Time and place

A matter which initially no attention was paid to, was the time of the day the interview was taking place. The assumption was proven, that the interview partner would rather be inclined to voluntarily extend the proposed duration when the interview took place in the afternoon, where the schedule tends to be more flexible in contrast to the one in the morning. The later the daytime the more vivid the conversation turned out to be. One part of the argument we believe is that a candid story telling in the morning requires more effort for some share of people that do not consider themselves as a morning person. Another part might be that in the afternoon the mind tends to be rather freed from tasks of the day in contrast to the morning.

The question of the location did not require too much of concern. Most important factor is the feeling of comfort for not only the interview partner but also of the interviewer. A good share of the interview took place in the offices of the interviewers. A location offering comfort and mitigating disturbance from the outside. Many people think the environment should be as neutral as possible, but it should be in atmospheres they used to talk. So, their own offices are a good place. Cafes and restaurant also turned out to be a supporting environment for this sort of interview.

7.1.1.1 Establishment of contact

After the clarification of the time and the location, we are ready to establish the contact with the interview candidate. Most of them were contacted by email and a few per phone. Being unknown to a good share of the candidates I contacted; a few rules help to receive a positive answer. This is what I took into consideration when I structured email or phone call.

- Stating the scientific mission and do not forget to mention the confidentiality of the data.
- Conveying the exclusiveness of the interview partner. The importance and background of the interview partner and reason why he or she could contribute to the research in particular
- Proposal of possible dates: Even though the person being contacted could not agree yet (except by a phone call) to the interview, to convey professional image and to speed up the process propose three possible dates including a time slot of 45 minutes.

Other than the above-mentioned rules it is imperative that the email is written short and concise. Long mails appear to be not worth the effort reading them.

The response turned out to be 100 % and only two interview candidates required an additional email to be “reminded”. The process went as smooth as expected and did not cause any problems that delayed the thesis anyhow. Recommendations from interview partner for another interview partner are advantageous and speeds up the process. It enables to convey a different level of trust and esteem to the courted interview partner. Let us go through a few aids for the interview’s conductions to be prepared beforehand.

7.2.2 Aids for conduction

In order to record the conversation an additional external microphone is definitely advisable. Most smart phones provide a good enough internal microphone, however unexpected noise (e.g.: from a construction side in the office, volume of music in a café) can decrease the quality of the recordings and turn the process of the transcription into a night mare.

We emphasized already the interview should have a conversational character instead of asking the question one by one without taking the answers into consideration. However, sometimes in the heat of the moment, important areas of interest can be forgotten to address, or the thread can be lost. A remedy for this was to use a few cards on which the questions and areas of concerns were written down. Further, these cards help to keep the overview on the areas covered throughout the interview.

What also supported the flow of the conversation was the use of a notebook and pencil. Writing down key words mentioned, helps referring to them on a later stage of the interview. More details are to be found in the upcoming sub chapter 7.1 Conduction.

Before we move to the conduction of the interview, one more important advice for the preparation should be given. A rehearsal of the introduction is imperative. It can take away unnecessary fears, but if poorly carried out it creates fears. The introduction sets the tone of the interview. Paying only little attention decrease the chance for a candid storytelling.

To support the communication during the interview a self-designed, so-called 'entrepreneurial student journey' (ESJ), see figure 32. The interviewee can freely locate themselves by indicating their interacted touchpoints along the x-label. The course of the x-label and hence their location is determined by the needs that exist (participants), that have existed (entrepreneurs) and which touchpoint address these needs (organizer). The y-label indicates the changing degree of motivation to proceed towards a potential commitment to start a business.

7.3 Conduction

This sub chapter describes in three phases (introduction, the guidance of the conversation and the end of conversation) learnings of the interviews' conduction. The language the interviews were held in a language, the interview partner feels most comfortable speaking in. In our case, all of them were held in German language.

7.3.1 Introduction phase

Without doubt, the first impression has a significant impact. As part of the first impression counts the introduction to the interview. Here we detail on what should be covered in the introduction in order to establish a comfortable atmosphere. After allocating some time for small talk, which fulfils an important job of getting comfortable with each other, Curry[329] proposes, for the interview partners to increase a candid storytelling, following aspects:

- Make them feel comfortable in the space. Make sure that interview partner is fine with the atmosphere you are at. This also refers to you as the researcher. This concerns to places that are not familiar to the interview partner.
- Introduction of oneself. A short but precise introduction about one's background always helps to increase trust between each other

[329] Curry (2015), available online at https://www.youtube.com/watch?v=6PhcglOGFg8, request of 21th February 2019

- Reasoning the interview partner's choice. Highlight beside the one time in the email or phone call why you decided for the interview.
- Confidentiality. Mention again that you are serious about the responsibility of protecting the interview partner's identity therefore ask for an honest sharing.
- Respect of time: Be mindful about the time and mention again that this is going to take 45 minutes as stated in the email or phone call. Further to thank them once more having agreed on an interview per se.
- Show genuine interest in the story of the interview partner.
- Set rules: E.g.: A question can be answered on later stage.
- Introduce once more the goal of the interview. In our case I did not emphasize on the characteristics, but I asked for a detailed description of touchpoints

By integrating these aspects into the introduction and rehearsing it well, a promising conversation can start off.

7.3.2 Guiding the conversation

A notebook and pencil, an aid that helps guide the conversation was already introduced in the sub chapter 7.1 Preparation. The benefits of noting down key words during the interview helps to refer back to these, without the need of an interruption, on a later stage. Further, while noting down, I had the feeling the interview partner felt encouraged to share, as it signals a contribution that was worth noting down. Besides that, the pre-commitment entrepreneurial journey can also be drawn from scratch and so explained in the meanwhile.

7.3.3 Types of probes

In order to keep up the flow of conversation it is necessary to sometimes drop questions or change the sequence of the interview guideline. Curry summarized a couple types of so-called probes to foster the flow of conversation. Table 5 provides an overview[330].

Table 5: Summary of seven types of probes suggested by Curry (et al. 2011) to keep up the flow of the conversation

Silent	Nod slowly, tilt head
Echo	Repeat the last statement and ask respondent to continue
Neutral	Encouraging; "I see" or "uh-huh"

[330] Curry (2015), "Fundamentals of Qualitative Research Methods: Interviews (Module 3)" available online at https://www.youtube.com/watch?v=6PhcglOGFg8, request of 21th February 2019.

Direct	“Tell me more” (very common)
Phased assertion	Imply you already know something or encourage respondent to speak up
Detail	Who, where, what, when, how
Clarifying	You said x, please describe what you mean by that

What increases the comfort of a conversation is slight attempt mirror the way the respondents communicate (e.g.: pace of speech. Some extent we tend to do it naturally. But still keep in mind to not impose your way speaking on someone else. It is all about making the other person feel comfortable, so the interviewer has to adapt to the responded and not the other way around.

As the title of this sub chapter suggest, it is supposed to be a guided conversation, which is an interplay of openness and structure. We elaborated in the chapter 6 Research design. A high degree of openness was applied to the interviewee categories entrepreneurs and participants. Since it is about their personal experiences, the entrepreneur and participants by nature, are directly connected to the story and so we rather abstained from applying too much structure. In contrast, for the interviewee category organizers, a higher degree of structure was applied since they are not directly connected to the story but in an observing position. The latter interview category functions as designer of the experiences and did not undergo them themselves, hence a rather less subtle approach can be applied.

In the next sub chapter, we deal withbehavior that has counterproductive influence on the interview.

7.3.4 Counterproductive behavior during interview

Here are a couple of learnings that emerged while conducting the interview:

- Imposing own opinion. It sounds logically first but after listening to the interview recordings a couple of times it happens subconsciously that I imposed my own opinion.
- Moving too quick from one topic to the other. Although, being aware the time is limited, there should be time for little pauses and silence. A little break of a few of seconds after a rather long story shared can even lead to deeper digging.
- Interruptions. Sometimes interruptions for different reason done unconsciously cannot be avoid. E.g.: the interview partner moves to a distinct wrong direction to answer the questions. However, we discovered from the listening to the recordings

a couple of interruption done unconsciously e.g.: lack of patience by the answers to come, due to assumptions. I.e.: When the interviewer cannot wait for the answer given and throws in its personal answers, be comfortable with silence. The notebook and pencil help remember key words, on which you can pick up when the respondent finished talking.

In the following chapter, we go through a few points that are well placed at the end of the interview.

7.3.5 End of interview

In this thesis, a total of 18 interviews were conducted. The reason why eventually the majority of the interview partners are organizers stems from their accessibility, received recommendations and the rich outcome of the interviews. Since already a huge amount of data was collected, we did not reach out to a fifth entrepreneur that would complete the formerly planned goal of five interviewee out of each interview category.

After elaborating on the data's collection let us now detail on its evaluation.

8 Data evaluation

The data evaluation, as made clear in the beginning of previous chapter, is applied after each interview conduction and so functions as an iterative approach. This chapter encompasses the process of using the qualitative data analysis software MAXQDA that supported the transcription of the interview and the organization of the identified experiences.

The evaluation with the help of MAXQDA is divided into three steps. In the first sub chapter the process and learnings of transcribing one representative interview from each interview category. Subsequently, we elaborate on how we identified the experiences and followed by the organization of the code system to able to trace back their origin.

8.1 Transcription

As we learned from the previous chapter, in this thesis, a total of 18 interviews were conducted. The interviews lasted between 50 minutes and two hours. Depending on the transcription method used of one hour recorded interview is expected to take between four and eight hours. Since this allocates a huge amount of time an option (direct coding of audio track), to speed up the process, was figured out. The time gain using direct coding is significant. Per one hour recorded interview only ca. 1.5 to 2 hours is required compared to the four to eight hours of transcription (except subsequent coding).

Applying the option to direct code the audio files, which is provided by MAXQDA, has its validity. This becomes clear when elaborating on the question why transcribing in the first place. Jeanine Evers summarizes it into three main factors that have to be taken into account when considering ditching a classic transcription for a direct coding of the audio file.[331] Accuracy, Traceability and the degree of insight and understanding. These factors are described subsequently.

8.1.1 Factors for transcription

Accuracy enables us to get a verbatim record of what is being said and so it's a more accurate way to represent the interview.[332] Traceability refers to the fact that it makes it easier to search expressions in a transcript and later on, to assign codes. Currently, audio and video files cannot be searched for words by a software.[333] The degree of insight and understanding deals with that the act of transcribing is itself partly analytic. It makes the

[331] Evers (2011), available online at http://www.qualitative-research.net/index.php/fqs/article/view/1636/3161 request of 21st February 2019
[332] ibidem
[333] ibidem

transcriber more conscious on what is going on in the interview and will deepen the understanding of the data.[334] Beside these three main factors, also the awareness of whether you asked suggestive formulated questions or steered the interview too much in one direction.

While being aware of the higher quality that comes along with transcription, the trade-off against direct coding the audio file was won by the latter one, since it meets this thesis' needs regarding the three before mentioned factors to a high enough extent.

8.1.2 Transcription method used

Evers proposes three methods to transcribe an interview. The pragmatic-, jeffersonian- and gisted transcription. For our three representative interviews, we applied a mixture of the first and latter one, that combines time efficiency and accuracy that meets the needs for this thesis. Table gives 6 an overview on characteristics of the three methods.

Table 6: Transcription methods presented by Evers

method	description[335]
Pragmatic transcription	It is the one in which researchers devise their own transcription format, tailored to their needs for analysis and the time and money available. It can be used in any kind of study, this to fit his/her needs. Mostly these transcripts are a verbatim (i.e., exact) reproduction of what is said, but less elaborated than Jeffersonian transcripts
Jeffersonian transcription	It tries to compensate for the loss of sound, pace, intonation and interaction in the conversation, which get lost during the conversion of sound into text. It was devised to overcome these voids as best as possible. Most time-consuming format of transcription for verbal data; it can take up to 20 hours of transcription time per recorded hour because of all the add-ons in the text. It is mostly used in language or interaction focused studies
Gisted transcription	A form of summarization used whenever the researcher thinks this will be appropriate for his/her research. A gisted transcript can take several formats, just as the pragmatic transcript mentioned earlier. The latter ones state that the gisting a file can only take one to two hours. Used whenever the researcher thinks this will be appropriate for his/her research.

8.2 Touchpoint level framework

This sub-chapter explains why focusing on experiences distinguishes from previous research in entrepreneurial intention and the accompanied benefits for touchpoint

[334] Evers (2011), available online at http://www.qualitative-research.net/index.php/fqs/article/view/1636/3161 request of 21st February 2019
[335] ibidem

designers. Eventually a new a new framework to structure touchpoints by their level of granularity (touchpoint level framework) is suggested.

8.2.1 Analogy to design principles

Current research on student's entrepreneurial intention usually focuses on elements of entrepreneurship courses (Muller 2008, 2011, Lorz,). These elements fulfill a similar purpose to the so-called design principles commonly applied in design disciplines, such as service design (also known as experience principles)[336]. This practice aims to identify patterns and to derive guiding principles, from single empirical events. Subsequently, these principles serve as the center for orientation and limitation when it comes to the design of touchpoints. In the domain of science theory, elaborated in chapter 6.4 Applied research design – modified grounded theory, this approach is well known, since similarities to inductive reasoning (extracting design principles) and deductive reasoning (applying design principles) can be drawn.

However, as stated in the chapter 3.4.51. Abductive thinking, strictly following this practice tends to label data to quick as outliers, something that does, by far, not fit into known and related principles or theories. Hence, potential valuable insights stemming from these outliers are too often not further investigated and remain hidden. This drawback is thoroughly elaborated by Martin (2010) and his interpretation of design thinking see chapter 3.4.5 Design Thinking.

8.2.2 Anti-patterns vs design principles – stop following the wrong rules

The discipline of service design takes this drawback into account through the concept of the "anti-pattern"[337]. Anti-patterns can heuristically be described as "what does not work but it looks like it does work" and can be equally valuable to design. They represent guidelines that are "being followed that should perhaps stop being followed"[338]. Following example demonstrates the value of anti-patterns in the design of experiences in e.g.: health care[339]:

- Example of anti-pattern: "Always tell the patient what the next steps are"
    - Explanation: "It appears as a very good – and sound common sense – design principle but which may, in some circumstances, provide the patient with such a daunting view of what is to come that they lose the will to proceed with the treatment."

[336] N.N. (N/S), available online at servicedesigntools.org, request of 30th May 2020; Cf. Kumar (2012), n.p.
[337] Bate/Glenn (2007), p. 77 ff
[338] Bate/Glenn (2007), p. 80 f
[339] ibidem

8.2.2.1 Counter-narratives

Related concepts on anti-patterns, represent counter-narratives[340]. Counter-narratives challenge dominant narratives (also build upon perceived common sense), in our case this involves questions on how to become an entrepreneur, what entitles someone to further pursue entrepreneurial action, what are the prerequisites needed and who's legitimate to proceed and hence supported by the entrepreneurial ecosystems? The answers to the questions are also ruled by design principles, emerged and refined over years, leaving little space for tapping the potential of discovering patterns as anti-patterns and the creation of counter-narratives.

Indicators of anti-patterns may be found in related domains in which diverse narratives (e.g.: counter-narratives) are told or different guiding principles are predominant. For instance, one student's prerequisites and motivation to become an entrepreneur does not fit to the dominant narrative of entrepreneurship and its guiding principles, no service or support from the ecosystem is provided. An example, stemming from empirical data of this thesis, follows in chapter 8.3.1.1 Experience identification example.

Anti-patterns that can lead up to counter-narratives are hardly visible and hardly to be found when entire events or even entire journeys, are led by guiding principles. Instead, breaking them down into smaller pieces, promises more potential discoveries. Hence, the degree of granularity of the target events must increase, the focus needs to be led on details instead of general principles. It also needs to be led on the potential outliers instead of the ones fitting well within known patterns and to avoid what is known as the commonsense fallacy. To achieve this granularity, the approach offered by the concept touchpoints levels, come into play.

8.2.3 Touchpoint level framework

General concept on touchpoints are explained in literature review in chapter 3.1.1 Definition of touchpoints. The concept of touchpoint levels presents an attempt of an extension to the existing concept. The core idea of the extension is to break touchpoints down into always smaller pieces of touchpoints. For this thesis, these smaller pieces reach the granularity of experiences, (constituted mainly by just one apparent and identified need). Experiences are classified as touchpoint level 3 within the touchpoint level framework, suggested in this thesis.

[340] Bate/Glenn (2007), p. 81 f

In contrast, commonly research apply touchpoint level 1 and 2[341]. Hence, potential for stronger and more effective design of experiences, to foster student's entrepreneurial intention, remain untapped.

Let us take a closer look at the different touchpoint levels, which are illustrated by figure 33.

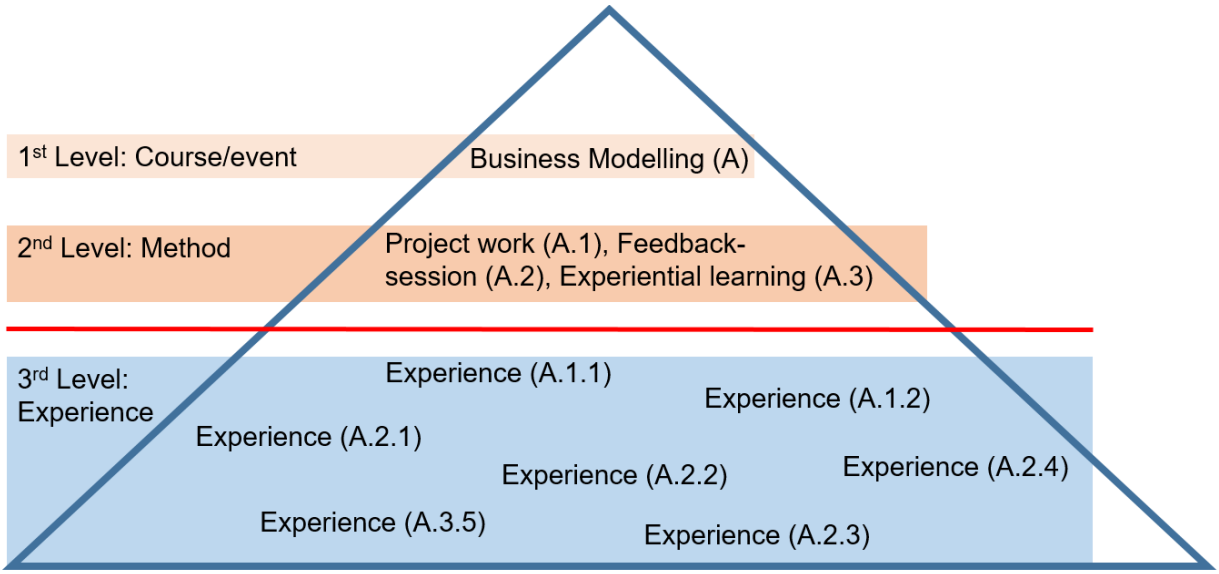

Figure 33: Touchpoint level framework in shape of an iceberg. Author's own illustration.

The levels are described below as follows:

1st Level: Merely indicate the course or event or meeting etc. as a whole. Example: Business modelling course, pitch event etc.

2nd Level: Indicate the method used in the course or event. Example: Experiential learning, project work, visit of role model etc.

3rd Level: Describe single experiences that occurred by need appearance e.g.: role model complimented student's contribution during discussion

The touchpoint level framework's illustration is inspired by the shape of an iceberg, to help imagine that experiences are often lying beneath the ones that are easier to see and more visible touchpoints (touchpoint level 1 and 2).

Now we elaborate on how experiences were identified.

[341] Cf. Muller (2008, 2011); Cf. Lorz (2011)

8.3 Identification of experiences

We started off with a procedure of experience identification that had been built throughout literature review and research design and was finished during the actual work of interview transcription. It resulted into two criteria to identify touchpoints.

1. Criteria: Need appearance
   It was determined after literature review and research design and describes a specific need to be apparent. A definition of touchpoints pointed towards, which is representative for many other definitions, stemmed from Chris Risdon and it suggests: “Touchpoint is a point of interaction involving a specific human need […]”.[342] This means, whenever a specific human need in a situation becomes apparent, it becomes addressable and hence it could have been addressed in a way that fosters entrepreneurial commitment or inhibited it. Further, it sheds light on potential underlying challenges students may have and provides the aimed deeper understanding of the experience.

2. Criteria: Applicability of experience design concept
   The pool of a large number of experience design concept or related to experience design was filled by two sources:
   - Existing concepts through desk research before the interview
   - Self-conceived and designed during the attempt of transcription and classification. The full list of experience design concepts can be found in appendix C.

Note that, only the criteria need appearance was required for an experience to be identified in the first place. The criteria of applicability of experience design concept was then optional, while transcribing and identifying experiences. However, in case no experience design concept was applicable also after the subsequent attempt to characterize and classify them, this experience dropped out.

Even though need appearance was a required criterion to identify experience, we did not document all the needs appearances of every identified experience. Since we focused on the subsequent logic of characterization and classification, it foremost only required to document the assigned experience design concept of the experience. Hence, the criterion of need appearance was used to identify experiences, but being able to proceed with subsequent work, a documentation of the exact need, was not necessarily required.

[342] Risdon (2016)

8.3.1.1 Experience identification example

The procedure of experience identification is explained by the following example.

Title of identified experience: Lack of ideas hinders progress

- Need appearance: “Idea needed to proceed on the entrepreneurial journey. Without idea one did not feel entitled to proceed.” (Explanation: Since the interviewee perceived the presence of, firstly an idea and secondly one to be convinced of, to be crucial to proceed on the entrepreneurial journey. This is reasoned by the answer to the question as followed, see figure 34: Question: “What do you need to proceed on the entrepreneurial journey? One needs to have an idea of which one can be sure of it will work.”
- Applicable experience design concept: “Interconnected entrepreneurial ecosystem”[343]

Wie würdest du die Schwierigkeit beschreiben? Was brauchst du um weiterzugehen in der Journey?
Man braucht eine Idee von der man sicher ist dass sie funktioniert. Eine Überschneidung, zum Einen was gebraucht wird, was man selber liefern kann und was durchführbar ist. Schlussendlich hat irgendwie der letzte Funke gefehlt damit ich überzeugt war.

Was hätte da helfen können in deiner Situation?
Ich glaube wir waren zu verkrampft. Wir brauchen etwas und dadurch wollten wir irgendwas erzwingen. Dadurch hatten wir keinen freien Kopf. Aber es ist schwierig zu sagen war wir gebraucht hätten. Das Problem ist, da der Fall ja nicht eingetreten ist (den Punkt der Idee nicht erreichten) kann ich nicht rückblickend sagen was ich gebraucht hätte.

Figure 34: Excerpt from the transcribed interview: (Touchpoint: Startup Spritzer; Interview category: Participant; Position: 8 - 11)

Figure 35 illustrates the structure of MAXQDA and the codified segment of the experience:

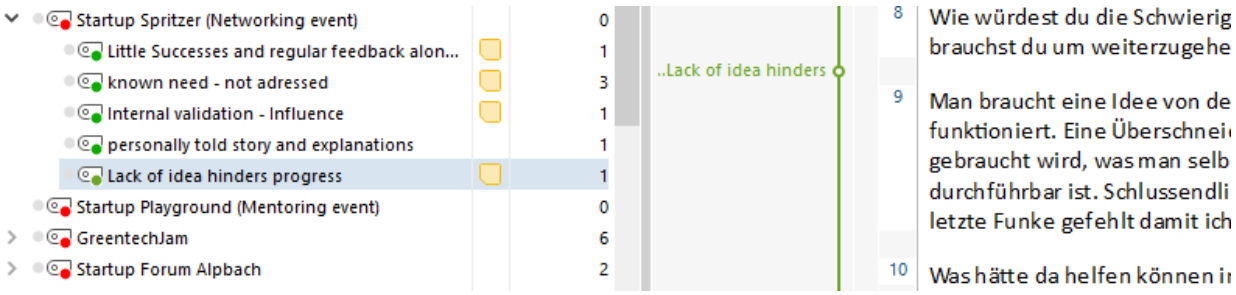

Figure 35: In blue marked experience “Lack of idea hinders progress” among the touchpoint “Start Spritzer”. On the very right side, the location codified segment within the transcribed interview is shown in green (“Lack of idea hinders progress”)

[343] View explanation of experience design concept in appendix C

More information on assigning codes and the code structure is explained and illustrated in the following chapter. The entire identified experiences along with the interviews are to be found in the appendix A and B.

8.3.2 Assigning Codes

Before detailing on the assignment of codes to the transcripts and audio files, let us first clarify what codes are. According to MAXQDA, codes can be described as the following:[344]

- word or short phrase the represents the essence or key attribute of narrative/verbal information
- used to codify or categorize data
- coding is the process of organizing data into chunks that are alike
- codes are developed into a code structure

MAXQDA also differs between codes and codings. A coding indicates the marked text on the transcript or in our case the of audio track.[345] A code therefore can exist of many codings in different locations in the text document and audio track. These explanations become more tangible in the next sub chapter.

8.3.2.1 Coding of transcripts and code structure

An example from MAXQDA of an assigned code and its location in the transcript is shown in figure 36.

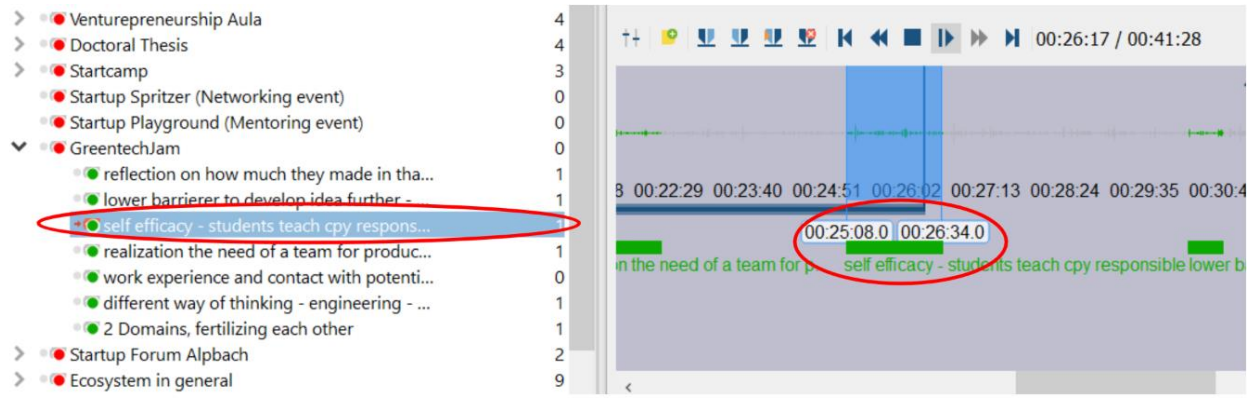

Figure 36: Screenshot taken from MAXQDA illustrating an active code on the left side ("self-efficacy – students teach ...") and its location in the transcript on the right side, which indicates the action of coding

[344] MAXQDA (n.d.), available online at https://www.maxqda.de/hilfe-max18/04-codes/ueber-codes-und-das-codieren-in-maxqda, request of 21st February, 2019
[345] ibidem

The touchpoints indicated by the red dot, represent touchpoints level 1, see figure 36. The ones indicated by the green dot that of the touchpoint level 3.

8.3.2.2 Direct code on audio track

As we elaborated in the chapter 8.1 Transcription, three interviews got transcribed and the rest of 15 interviews were directly coded on their audio track. Figure 37 illustrates an example: “self-efficacy - student teach company responsible”.

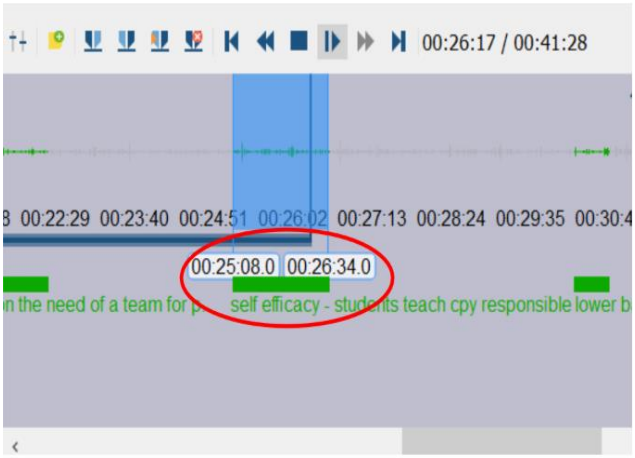

Figure 37: Direct coding of an interview’s audio track. An excerpt from qualitative analysis software MAXQDA.

8.3.2.3 Attempt Classification of characteristics

Eventually, 113 identified experiences were assigned 49 experience design concepts. These experience design concepts were named characteristics and subsequently classified into a self-conceived logic of three groups such as “essential characteristics”, “intentional characteristics” and “goals”. The idea behind the three groups is based on the following considerations:

- Essential characteristics: Characteristics that are always existent when it comes to characterize experiences. Example: time and place
- Intentional characteristics: Characteristics that are not necessarily be existent in the first place, but can, by touchpoint provider intended to take place and finally be executed: Example: Versatile applications
- Goals: Are characteristics that neither are necessarily existent, but they rather are an outcome that cannot be planned. The execution cannot be ensured. Example: Building friendships

See the structure, explanations and the assignment of the experiences to their group in the appendix C.

However, as the title of this sub-chapter conveys, it remained merely an attempt to classify the characteristics since we decided to pivot research focus of the thesis towards. This pivot towards another focus is elaborated in the following sub-chapter.

8.4 From characterization to contribution

Instead of finishing the procedure of identification of characterizations (and the subsequent classification) to one of the beforementioned self-conceived groups, the focus shifted towards an alternative procedure. This decision was a consequence drawn from following observations on the results and occurring circumstances during the process of characterization and classification:

During this consideration, an alternative idea on how to treat the collected data was present and found to better meet the intended approach of keeping the data free from principle generation or assignment to existing models. Further it offered a coherent and reliable structure.

This alternative procedure shifts the focus on keeping the experience free from additional application of principles, theories or models, to avoid potential influence on the course designer's interpretation and hence its further design. Hence, the theory of planned behavior shall now also serve as the model to characterize the identified touchpoints, by the eight key variables used in the interview questionaire. It also enables touchpoints to the chance of becoming transferable into another sub-ecosystem (based on the eight key variables of theory of planned behavior. This property of transferability is termed cross-benefit and explained in the following chapter Results.

8.5 New focus – touchpoint cross-benefit

The new logic we pivoted towards, suggests characterizing touchpoints by their eight key variables of decomposed theory of planned behavior. But instead applying this characterization after the collection of data, it is already applied prior to it. By solely formulating questions during the interview based on that eight key variables and with a subsequent quantitative ex-post research design.

The cross-benefit function enables the eight (note: eight key variables from DTPB) impacts of touchpoints (e.g.: self-efficacy) to be transferred into another sub-ecosystem or differently put, into another touchpoint level 1 (e.g.: start-up pitch contest). This idea of benefit transfer is commonly applied when principles, theories (e.g.: role model inspire students) are put into practice and in case of touchpoints of level 1 and 2 (e.g.: entrepreneurship course flipped classroom approach), however it is not within touchpoint

level 3. This cross-benefit function is now explained by the previous example used in sub-chapter 8.3.1.1 Experience Identification Example: Experience: “Lack of idea hinders progress on the entrepreneurial ecosystem”. Applying the tool of touchpoint contribution chart (TCC) following results can be is obtained:[346]

8.5.1 Process for cross-benefit function

First, the TCC needs to be generated. Therefore, a total of eight questions (representing the eight key variables of DTPB) are rated by the student using a Likert scale. Subsequently a spider web chart can be obtained which provides a quick impression on the touchpoints’ impact expression of each key variable. Figure 38 and 39 illustrate the experience “Lack of idea hinder progress”.

[346] Note that the information on the research method “ex-post” is not addressed to the collected empirical data but only serves as a recommendation for future research.

Perceived Behavioral Control (PBC)	
Self-efficacy (1) Belief in one's own ability to perform a certain task, in this case to start a business	**Reason of rating:** Since the participant did not own an idea, it was rated that low. It's the participant needed to come up with, hence if it's absent why would I become an entrepreneur. I felt eventually to be at the wrong place. **What had to be different to increase your rating?** I don't expect to kind of ask for, to able to receive help when you aren't equipped with an idea, to enter the ecosystem. It'd helped to be offered a service/event/course where I would learn about how let say mandatory certain tools, skills and eventually the ownership of an idea is.
Facilitating resources (2) Perception of resources available (e.g.: mentor- ship, funding, time etc.)	**Reason of rating:** There seemed to be certain resources available but not for my situation. Hence, I can make use of them and rate them to high whether they would have support me etc. **What had to be different to increase your rating?** To apply and make use of them, to see whether it works for me. But since the idea was absent, there was no reason for it.
Facilitating conditions (2) Perception of conditions prevailing which support business foundation (e.g.: laws, etc.)	**Reason of rating:** Conditions seemed to be appropriate. It was perceived a plethora of events and courses on the topic of founding a company. However, it can't really rate them since it did not come really in contact with them, due to the absence of the idea. **What had to be different to increase your rating?** Can't be answered since it did not really come in contact with them.
Attitude towards Behavior (AtB)	
Perceived usefulness (utility, relative advantage) (6) Belief in advantages that come along (e.g.: fulfillment, financial benefit, flexibility…) when starting a business	**Reason of rating:** It seemed a lot of advantages that come along, especially the one of the community and networking possibilities, the event showed me a vivid scene that is helpful etc. **What had to be different to increase your rating?** Myself being a founder or at least pursuing an idea.
Simplicity (4) Perceived simplicity of the task and challenges when it comes to start a business	**Reason of rating:** It showed my there is a lot learn and to know. At times it was appeared to be little overwhelming. Still, it neither increase or decrease my perception of the complexity respectively simplicity **What had to be different to increase your rating?** Like best practices and that entrepreneurs shared the most important skills they applied to handle complex challenges.
Compatibility (6) Compatibility with one's own values and beliefs when it comes to start a business	**Reason of rating:** It very much fit to what I believe in. The experience of the 1 to 1 conversation helped me to understand and confirm that the present entrepreneurs were quite aligned with my beliefs. **What had to be different to increase your rating?** Probably when participant was to become a founder or pursuing an idea. This allows for a different interaction with the ecosystem
Subjective Norm (SN)	
Interpersonal norms (6) Perception of opinions of significant others (friends, family, colleagues) about starting a business	**Reason of rating:** Since being accompanied by a good friend and involved in the experience as such, it did increase perception of a supporting environment. **What had to be different to increase your rating?** Hard to say, probably how the present people involved in the experience perceived this influence and perception themselves.
Extra personal norms (5) Perception of opinions of the environment (media, culture) on starting a business	**Reason of rating:** It further confirmed the perception on the cultural stance to support. From this experience taught how interconnected and wide spanned the scene is. **What had to be different to increase your rating?** Hard to think of, probably a statistic on how many people considered to become an entrepreneur and the potential increase of the number
o significant decrease (1) o decrease (2) o slight decrease (3) o neutral (4) o slight increase (5) o increase (6) o significant increase (7)	

Figure 38: Questions and answers in the TCC structure of an experience, based on the eight key variables, serves for the creation of the spider web chart. Answers shown in the figure are solely an example and not based on empirical collected data

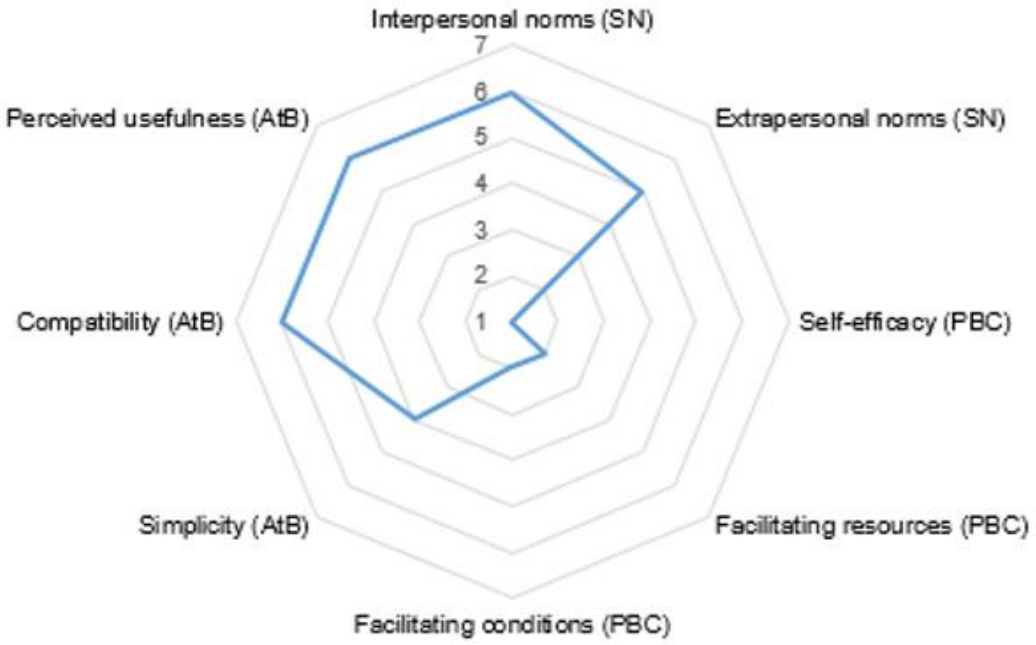

Figure 39: Resulting spider web chart, illustrating the eight key variables to describe an experience by the structure of TCC. This example is based on the rating from figure 38.

Generated TCCs are continuously collected and archived in a preferably shared database, accessible for the entire touchpoint designer community within an ecosystem.

Secondly, since these TCCs are shared and made accessible to touchpoint designer from other institutes across faculties, the touchpoint's beneficial impact is enabled to be transferable into other sub-ecosystems. Hence, touchpoint designer from institute A knows (through the generation of TCCs) that his touchpoints rate low in key variable e.g.: "Perceived behavioral control" (PC). A search in the TCC database filters touchpoints ranked high in the mentioned key variable, among them a touchpoint generated by touchpoints designer from institute B. Touchpoints designer from institute A can now inform himself about the experience, reasons behind the rating, its context (touchpoints levels) in short, is equipped with a new touchpoint, ready to be implement in its existing set of touchpoints. A complete description of the TCC can be found in following chapter 9 Results.

9 Results

The obtained data from the interviews, the pivot in the evaluation attempt and the insights form the literature review served as the basis for the main result: touchpoint contribution chart (TCC). This tool is designed to support in particular designers of curriculums, courses, events and ultimately designer of any touchpoint, to foster entrepreneurial commitment.

9.1 Touchpoint contribution chart (TCC)

TCC describes touchpoints on the level of experiences (touchpoint level 3; see touchpoint level framework). Each touchpoint has eight key variables based on the decomposed theory of planned behavior (DTPB).

9.1.1 Structure of TCC

Each experience is presented with a short description to provide a glimpse on its content. Only further processed in the touchpoint contribution chart it is regarded from eight different angles (based on eight key variables of decomposed theory of plannedbehavior). A seven-point Likert scale shall sufficient display the touchpoint's effect on someone's decision-making process towards entrepreneurial commitment. A Likert scale ranging between 5 – 7 points provide most accurate ratings. Eventually, the centerpiece of the touchpoint contribution chart is demonstrated by addressing two questions from the test subject. Firstly, reason of this rating and secondly what would have increased the rating.

These quantitative ratings are expressed and illustrated along a net diagram to easily communicate the experience's effects in detail. This provides designers, with sort of a database to inform strong design of experiences within the entrepreneurial ecosystem. It enables a permanent display and could be retrieved by an application through the university's intranet.

1

2

3

about: Without idea the entrepreneurial ecosystem is hardly accessible. Participant did neither expect to be picked up and addressed in his need by certain services from the ecosystem. Conversions at the event merely revolved around ideas. It also revolved around vision but only in presence of ideas, one is really convinced of.

Touch point level 2: **Socializing session**
Touch point level 1: **Startup Spritzer**

4

5

6

Perceived Behavioral Control (PBC)	
Self-efficacy (1) Belief in one's own ability to perform a certain task, in this case to start a business	**Reason of rating:** Since the participant did not own an idea, it was rated that low. It's the participant needed to come up with, hence if it's absent why would I become an entrepreneur. I felt eventually to be at the wrong place. **What had to be different to increase your rating?** I don't expect to kind of ask for, to able to receive help when you aren't equipped with an idea, to enter the ecosystem. It'd helped to be offered a service/event/course where I would learn about how let say mandatory certain tools, skills and eventually the ownership of an idea is.
Facilitating resources (2) Perception of resources available (e.g.: mentor- ship, funding, time etc.)	**Reason of rating:** There seemed to be certain resources available but not for my situation. Hence, I can make use of them and rate them to high whether they would have support me etc. **What had to be different to increase your rating?** To apply and make use of them, to see whether it works for me. But since the idea was absent, there was no reason for it.
Facilitating conditions (2) Perception of conditions prevailing which support business foundation (e.g.: laws, etc.)	**Reason of rating:** Conditions seemed to be appropriate. It was perceived a plethora of events and courses on the topic of founding a company. However, it can't really rate them since it did not come really in contact with them, due to the absence of the idea. **What had to be different to increase your rating?** Can't be answered since it did not really come in contact with them.
Attitude towards Behavior (AtB)	
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Simplicity (4) Perceived simplicity of the task and challenges when it comes to start a business	**Reason of rating:** It showed my there is a lot learn and to know. At times it was appeared to be little overwhelming. Still, it neither increase or decrease my perception of the complexity respectively simplicity **What had to be different to increase your rating?** Like best practices and that entrepreneurs shared the most important skills they applied to handle complex challenges.
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Extra personal norms (5) Perception of opinions of the environment (media, culture) on starting a business	**Reason of rating:** It further confirmed the perception on the cultural stance to support. From this experience taught how interconnected and wide spanned the scene is. **What had to be different to increase your rating?** Hard to think of, probably a statistic on how many people considered to become an entrepreneur and the potential increase of the number
o significant decrease (1) o decrease (2) o slight decrease (3) o neutral (4) o slight increase (5) o increase (6) o significant increase (7)	

7

Figure 40: Touchpoint contribution chart which consists of eight basic elements (See the numbering)

The elements marked by the number in figure 40 indicate the following:

1. Index and title of experience (touchpoint level 3)
2. Spider web chart indicate to which extent this experience effects each of the eight key variables of the decomposed theory of planned behavior.
3. Short description of the experience itself. This is constructed from the interviewer's point of view and it functions as a summary without following a distinct structure. The essence of the student's need within the experience should be conveyed.
4. The touchpoint level hierarchy is presented, whereas the 1st level touchpoint (course/event) is if possible, illustrated by a logo to quickly convey this information.
5. A summary of the eight key variables is shown organised in groups, indicating the rating in curved brackets.
6. A summary of the essence of the experience taken from the interview is rendered and partly quoted. by the help of answering two questions: i) The reason of the rating? ii) What had to be different for the rating to increase?
7. Shows the explanation of the seven-point Likert scale.

9.2 Further examples of identified experiences

This a short selection of experiences from the pool of identified touchpoints (see appendix B). The selection does not follow any order or principles, it solely aims to offer a more comprehensive image on the obtained variety of experiences. The notes below the experience title aims provide a more tangible understanding of the identified experience.

- "students teach company responsible:
  This experience made students explain a topic, respectively perform a certain skill or something they have expertise in, to a role model (e.g.: entrepreneur). This role model gave the feedback of a learning experience back to the students. Students reported increased self-efficacy since this made them better aware of their own knowledge and skills.

- "Influence on the solution of problems of local companies"
  Helping to solve problems of real companies operating in the city you live in and also being a customer (Energy company), influences their perception of working for a problem that is also indirectly affecting myself.

- “Teamwork within student organisations”
  The experiences of teamwork and group dynamics within student organisation seem comparable to the ones within a startup. This made the founder of a startup conclude in the retrospect that being active in a student organisation can foster entrepreneurial mindset and lastly intention.

- “realization of own expertise by working among other expertises”
  Working in a project consisting of team members with expertises makes you realize the worth your own skills and capability and hence might have a positive on the self-efficacy.

9.3 Touchpoint contribution chart landscape (TCCL)

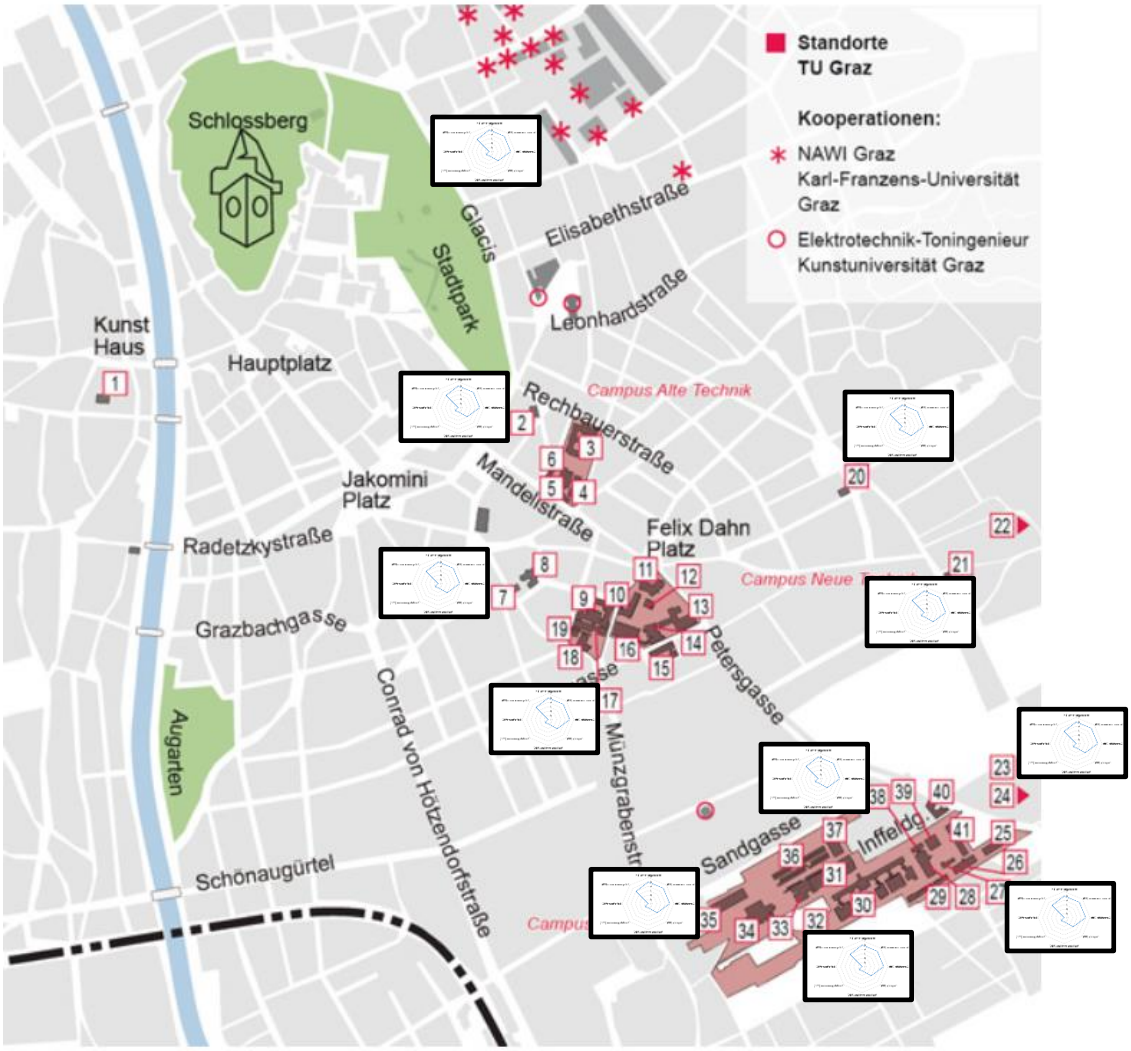

Figure 41: Touchpoint contribution chart landscape (TCCL) indicates the geographical location (campus, building, institute, classroom, etc.) of the identified occurred experiences. Underlying campus map provided by Graz University of Technology. Modified illustration by the author

The touchpoint contribution chart landscape (TCCL) in figure 41[347] shows the map of the three campuses of Graz University of Technology and illustrates (exemplified) the locations of identified experiences by a small icon using the web diagram of the TCC. This visualizes for instance where self-efficacy is very strongly, respectively hardly perceived by students from interacting with touchpoints occurring at the campuses. Hence, this map can help designers of curriculum, events, and courses as well as university managers to balance and compensate lacking perception of certain key variables occurring within campuses.

[347] Graz University of Technology (2019), available on at https://tu4u.tugraz.at/fileadmin/public/Studierende_und_Bedienstete/Information/Lageplaene/Lageplan_detail_campus.pdf request of 21st February 2019

10 Conclusion

To form conclusions for this thesis, let us recall the initial goals. Those involved to provide a tool to support our beneficiaries. They are designer of curricula, entrepreneurship-related courses, and event designers as well as ultimately university managers. The outcome of our research should support these customers in their task to design more expedient experiences for students to unfold their entrepreneurial minds and thus, contribute to the transformation process of the entrepreneurial university.

Before we draw conclusions from the thesis' outcomes, we provide an overview of the contributions rendered to the research fields involved.

10.1 Contributions within research fields involved

Four overall contributions to specific research areas can be stated. Firstly, it contributes to the understanding of causal relations in the field of decision-making processes of students, towards their commitment to entrepreneurship. Through the application of the decomposed theory of planned behavior it contributes to the identification process towards a causal relationship of entrepreneurship-related experience and their effects on the entrepreneurial intention. Secondly, it contributes to the field of entrepreneurship education by the identification of supporting and hindering experiences along the entrepreneurial student journey. Thirdly, it contributes to the field of customer journey, by the analysis of touchpoints, expressed by the design proposal of the touchpoint contribution chart (TCC). Fourthly, it contributes to the field of abductive research logic by the application of a research design that borrows largely from the first and second phase of the design thinking process.

10.2 Conclusions from literature review

Much of literature on journey maps is focused on different kind of journey maps and hardly describe the concept of touchpoints more thoroughly. Touchpoints are solely described by rather physical properties (such as: digital, analogue, etc.) and the link to the domain of experience design, respectively its impact on decision-making, remains lose. Further, addressing the research field of entrepreneurial intention (EI), most research apply concepts around the theory of planned behavior to serve solely quantitative investigations. The ones applying qualitative studies do not link with experience design respectively with the concept of touchpoints.

10.3 Conclusions on empirical research

Within this phase, we embraced ambiguity and did not seek to identify the common elements of an experience, nor a mutual denominator respectively elements that occur in a reliable manner. Instead, we embraced diverged output. This becomes clear when elaborating on the conclusions. Firstly, we shortly summarize the conclusion drawn from collected data. Secondly, the more elaborated part of the conclusion deals with the touchpoint contribution chart.

10.3.1 Conclusion on the collected data - from characteristics to contribution

The initial goal to identify characteristics of touchpoints as such, that would serve as prerequisite for a subsequent clustering and classification, was reached. Due to the circumstance that a useful and coherent concept of classification did not evolve hence we pivoted towards another approach on how to extract benefits from the collection of experiences. Hence, we worked out another concept of characterization and classification by the TCC (touchpoint contribution chart) based on the Ajzen's theory of planned behavior. So, eventually a pivot from characteristics to contribution.

10.3.2 Conclusion from the prototyped tool: Touchpoint contribution chart

A) A touchpoint level framework was developed to structure the granularity of touchpoints ranging within three levels, which offers curriculum designer a new perspective on designing touchpoints.

B) Uncovered anti-narrative: Collected data in form of experiences did further challenge prevailing narratives, namely the one, as mentioned above, the need of an idea to be critical (especially one to be highly convinced of) to progress along the entrepreneurial journey within the ecosystem. However, this dominant narrative is challenged by design thinking's principle of iteration. Simply the fact that countless interaction of ideas, turn the initial idea (one might be highly convinced of) in a rather less critical factor, and instead turn the process of iteration itself (among the steps of design thinking) into the much more critical factor to succeed. Hence, if the process of iteration is carefully and strictly pursued, the qualities of the initial idea and the extent one is convinced of, loses its relevance. This argues for touchpoints within the entrepreneurial ecosystems addressing students without owning an idea but instead are solely driven by their vision to solve a problem, which ever idea might eventually be required to do so.

This serves as an example how a prevailing narrative can be uncovered as an anti-narrative, or in other words, prevailing assumptions were reassessed and found misguiding.

10.3.3 Discussion

A) Design Thinking's first stage seeks understanding of the problem to 'do the right thing'. At this stage, no business idea to be highly convinced of is needed. In fact, the starting point within the Design Thinking's process depends on the prerequisites available and does not strictly suggest a logical entry point. In the presence of a business idea, the suggested entry point could be prototyping. There are indications, that this approach and mindset, which is today regularly applied in corporate innovation management, does not translate into the politics of entrepreneurial ecosystem at universities. Since the entry point requires the presence of a business idea. Without the presence of an idea respectively the immediate intention to develop one at that very touchpoint (either provided by a start-up/company or by the student themselves) there are touchpoints helping process along the ESJ. Why are there no touchpoints with the aim to gain deep understanding of a problem? (addressing first and second stage of the design thinking process). One of Design thinking's imperative is that we cannot be capable of judging whether our ideas are worth anything unless we gain deep understanding of the problem they address. This, in turn means that we should abstain from getting to much drawn to our ideas but instead, take a neutral stance to it. Instead, we better get drawn to the process as well as with the problem to be solved.

B) Measuring the right metrics. This raises the question of whether we look at the right metrics when it comes to rating the success entrepreneurial ecosystems.
As results indicate, the student's idea might not be that most important metric when it comes to foster entrepreneurship at university. Further, the traits that currently describe an entrepreneur should not be viewed as static, but dynamic and so they change over time. Hence, designing touchpoints which not only center around the idea, can yield additional value for the student's entrepreneurial customer . If certain traits do not fit in a predefined model of an entrepreneur, if these traits are not associated with what is commonly understood as an entrepreneur (which is constructed by from data from the past), these students won't be identified and hence supported within the ecosystem. What makes an entrepreneur and entrepreneur can unveil untapped entrepreneurial potential within entrepreneurial ecosystem.

Hence, instead of maintaining this ‘idea centered’ ecosystem policymakers should orient towards a ‘vision respectively problem-centered’ ecosystem.

Further, are we measuring the right metrics of our entrepreneurial events and courses? Perhaps, not always do the visitors of entrepreneurship-related events serve as a representative metric. Which metrics serve as antecedents of sustainable number of entrepreneurial activities and successfully build start-ups? How would it influence policymakers, curriculum course and event designer’s when we start measuring the attempts of start-up foundings by a group of people or a single person and the learnings they made along the way in a qualitative manner? The value of metrics and what their effects have still to be defined.

10.4 Limitations

Several aspects connected to this research remain unaddressed and hence are relevant to mention.

Scope: This thesis did investigate a limited amount of experience design concepts; hence a broader and deeper investigation can lead to different results.

Time dependency: Once identified experiences and their effects do change over time, due to the reason that the recipients of that experience change along the journey and the context parameter within the ecosystem does as well. Within an ever-changing entrepreneurial ecosystem experiences that effected a certain key variable to high extend might reduce its effect due over time, due to the ever-changing set of experiences students equipping themselves with. Hence, research on experiences should be executed on a regular basis.

Majority of experiences stem from interview group of organizer: The fact that most experiences stem from the organizers might not only be due to fact that the majority of the interviewees (9 out of 18) were organizers but also they might be more conscious, thoughtful and reflective on the actions they took in order to foster entrepreneurial mindset and hence create these touchpoints. This increased reflection contributed to a higher yield on experiences stemming from organizers.

The ability of self-assessment: The ability to self-assess the degree of entrepreneurial motivation concerns both interview groups of participants and entrepreneurs varies, hence the received data might stem from a wrong assessed respectively interpreted source.

Deceptive memory: Since interviewed entrepreneurs are asked to reconstruct their memory and describe the experience in a retrospective, the further distant are from them in time, the less accurate they might be.

Second-hand information: In contrast to the other two interview groups, organizers provide information stemming from their perception of the experiences' effect on student's entrepreneurial intent. This includes another source of potential mistaken interpretation on the experiences' effects.

Context sensitivity: touchpoints described by TCC do not claim that its impact is independent from the context in which they are transferred to. Hence, there is no reproducibility guaranteed and touchpoints applied in different contexts (sub-ecosystem) might effect different impacts on the key variables.

10.5 Implications for future research

As elaborated in chapter 6 Research design, this thesis covers the first stage and provides a glimpse of the second research stage, within design thinking's four-stage framework. In this first stage we aimed for a diverged output on experiences. The second stage aims to converge towards a more condensed output and settle on a few experiences to be further investigated. This converged output orientation results in increased clarity about the experiences and reduces overall ambiguity that comes along with the vast amount of data stemming from the first stage.

- Feeding the TCCs with data: Further identified experiences can be evaluated by the touchpoint contribution chart. This consists of both a quantitative and qualitative research design. Certain experience that constitutes, on the one hand of strong extents in both directions on some key variables, or on the other hand on promising qualitative data. This would provide the basis for the following third stage aimed for diverged output on ideas to address these problems.
- Observation of experiences: Certain TCCs (including some without a compelling reason for further investigation, see abductive research logic) should be proved through observing instead of interviewing or surveying them. By observation, the data collected can uncover contradicting results from what students say (interview or survey) and what they actually do. (also refer to anti-patterns and counter-narratives)
- Evaluation of filled in TCCs: Preparing statistics and drawing statements from TCCs quantitative and qualitative data. This statistic serves as the basis to uncover patterns that can be combined and plotted within the TCCL. Further, it can contribute to identifying promising areas to further investigate, due to potential

contradicting data compared to the qualitative research (contradictions about what they rate quantitatively and what they express qualitatively).

- Ideation with students to improve TCC: A set of thoroughly designed ideation workshops can increase the diverged output on valuable solutions, by utilizing the creative potential of students. Additional side effects emerge as increased co-ownership of students concerning the contribution, they made in the design process of the solutions.

- ‘Desirability TRIZ’: Analogue to the logic of the innovation method TRIZ, which is used to solve technical problems by changing certain functions that reoccur in innovative technology, it can help solve desirability problems, by changing certain elements of experiences. Hence, this thesis can be used to develop a “Desirability TRIZ”

- Focus research to uncover anti-pattern and counter narratives.

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List of Abbreviations

HEI	Higher education institutions
MIT	Massachusetts Institute of Technology
WEF	World Economic Forum
GEM	Global Entrepreneurship Monitor
UN	United Nations
NGO	Non-governmental Organization
HCD	Human-centered design
TCC	Touchpoint contribution chart
EE	Entrepreneurship Education
ESJ	Entrepreneurial student journey

Appendix A

This appendix includes the interview guidelines for the three interview stakeholder categories (entrepreneur, participants, and organizer).

Entrepreneur:

Allocation to DTPB key variables [- = none]	Question
-	What excites about being an entrepreneur?
-	How come you became an entrepreneur?
-	With which touchpoints did you interact with along the way to realize the patent? (Eg.: in form of conversations, participation in events, etc.)
-	Who were they? Meaning what was the relationship towards them? (role models, peers etc)
-	What did you learn regarding the phase before and after founding your business
-	How did these learnings influence your career choice?
-	Which ones did influence the most and why?
-	How did these influence your choice to become entrepreneurial active?
-	When you would break it down on this label depicting your journey, when would you say, you… [came with the idea], [decided to become entrepreneurial active], [motivation phases] etc.
-	In this phase right after the light bulb moment, what would you have wished for, to move the idea faster and easier to its realization?
-	When would you pin down the time you decided to become entrepreneurial active
-	And when looking at the timeline, before that final touchpoints in the meeting? What happened there before?
-	Have you attended some start up events prior to your decision?
-	What was your opinion on your capabilities to master the entrepreneurial journey beforehand?

-	Before your decision, have you experienced events/occasions of any kind that fostered your way to become entrepreneurial active?
-	Before your decision, how did you perceive the advantage that would came along with being an entrepreneur?
-	What kind of picture did you have about the being entrepreneur?
-	How would it have influenced your decision to become entrepreneurial active, if your institute offered you all the freedom and you could work on your idea within the TU Graz? An intrapreneurial approach.
-	What do you think has to be improved at our university's system for many more entrepreneurs, like you are, to emerge?
-	Should then more students get "distracted" from predefined curricula and directed towards these student organizations?
-	How would you draw in a qualitative graph of your motivation to pursuit the idea's realization?
(PBC) Self-efficacy	How did [touchpoint x, y, z] influence your belief in your entrepreneurial skills, respectively that you are going to succeed?
(PBC) Facilitating resources	What impression did you get about the available resources provided by Graz, University of Technology that help realize your idea? [mentorship], [prototype materials], [machine equipment], [information of market demand] etc
(Attitude towards Behavior) Perceived relative advantage	How did it influence your opinion on the advantages respectively disadvantages that naturally come along when being entrepreneur? [development on a personal level], [flexible working hours], etc
(AtB) Complexity	How did it influence your opinion on how complex the daily work respectively the tasks as entrepreneur are going to be? In terms of lack of understanding of the [market demand and customer], [financial affairs], [the law affairs], [human resources], etc
(AtB) Compatibility	From your perspective, the perks and traits that the profession of an entrepreneur brings a long, how do they match with your need, values and beliefs?

DTPB (SN)	To which extent have colleagues and friends, who were on a lower level of skill in term of entrepreneurship, influenced your decision to become an entrepreneur
DTPB (SN) Peer Influence	To which extent have colleagues and friends that were in a similar situation, equipped with similar skill level and experience, influenced your decision to become an entrepreneur.
(SN) Role model Influence	To which extent have role models influenced your decision to become an entrepreneur
	What was something you still remember. Moments of highest satisfaction and disappointment? Something that have heavily stopped you on your way respectively pushed you forwards!

Organizer:

	How often do you organize, respectively are you involved in the execution of such events?
	Who are the target groups of the event?
	How did the event go?
	With what were you satisfied and with what you were not?
	Why where you satisfied/unsatisfied with [touchpoint…x, y, z]?
-	What were the goals of the event, respectively of your job?
-	To what extend were those goals reached?
-	What did you learn, respectively what insights did you take away from the event? [i.e.: in terms of participants' motivation and performance, applicability of the method(s) used, etc.]
--	How would you describe the intentions behind the single parts of the program?
-	To what extend should these parts of the program trigger emotional experiences
-	When looking at the entrepreneurial student customer journey, participants at which stage do you think benefit the most from attending this event?

(PBC) Self-efficacy	How did attending the event, respectively interacting with touchpoint [x, y, z] influenced the participant's opinion on their entrepreneurial capabilities. Paraphrased: How more or less likely do the participants think they can become an entrepreneur?
(PBC) Facilitating resources	What do you think is the student's impression about the available resources provided by Graz, University of Technology that help realize your idea? [mentorship], [prototype materials], [machine equipment], [information of market demand] etc
(Attitude towards Behavior) Perceived relative advantage	How do you think did it influence student's opinion on the advantages respectively disadvantages that naturally come along when being entrepreneur? [development on a personal level], [flexible working hours], etc
(AtB) Complexity	How do you think did it influence student's opinion on how complex the daily work respectively the tasks as entrepreneur are going to be? In terms of lack of understanding of the [market demand and customer], [financial affairs], [the law affairs], [human resources], etc
(AtB) Compatibility	To what extend do the touchpoints meet their general needs, values and capabilities of the participants interacting with it. Where the participants picked
(SN) Student Influence	To what extend do you think does the interaction with other students without any entrepreneurial motivation influence the participants' motivation to become entrepreneurial active?
(SN) Peer Influence	To what extend do you think does the interaction with other peers (i.e.: workshop participants, similar entrepreneurial motivation, and knowledge background) influence the participants' motivation
(SN) role model Influence	To what extend do you think does the interaction with role models (entrepreneurs) influence the participants' motivation to become entrepreneurial active
-	Which needs do you think the participants bring to the event? How well do you think you managed to address these needs?
-	What do you think is critical moments during the events to for participants to lose or gain motivation?

Participants:

-	What kind of picture did you have about the being entrepreneur?
-	How did the learnings from the touchpoints influence your career choice?
-	Which ones did influence the most and why?
-	What do you think has to be improved at our university's system for many more entrepreneurs, to emerge?
DTPB (PBC) Self-efficacy	How did [touchpoint x, y, z] influence your belief in your entrepreneurial skills, respectively that you are going to succeed?
DTPB (PBC) Facilitating resources	What impression did you get about the available resources provided by Graz, University of Technology that help realize your idea? [mentorship], [prototype materials], [machine equipment], [information of market demand] etc
(Attitude towards behavior) Perceived relative advantage	How did it influence your opinion on the advantages respectively disadvantages that naturally come along when being entrepreneur? [development on a personal level], [flexible working hours], etc
(AtB) Complexity	How did it influence your opinion on how complex the daily work respectively the tasks as entrepreneur are going to be? In terms of lack of understanding of the [market demand and customer], [financial affairs], [the law affairs], [human resources], etc
(AtB) Compatibility	From your perspective, the perks, and traits that the profession of an entrepreneur brings a long, how do they match with your needs, values, and beliefs?
DTPB (SN)	To which extent have colleagues and friends, who were on a lower level of skill in term of entrepreneurship, influenced your decision to become an entrepreneur
DTPB (SN) Peer Influence	To what extend do you feel does the interaction with other peers (i.e.: workshop participants, similar entrepreneurial motivation, and knowledge background) influences your decisions-making process to become an entrepreneur?
(SN) Role model Influence	To what extend do you think does the interaction with role models (entrepreneurs) influenced your decision-making process to become an entrepreneur?

- What was something you still remember. Moment of highest satisfaction and disappointment. Something that have heavily stopped you on your way respectively pushed you forwards!

Appendix B

This appendix includes three conventional transcribed interviews and 15 audio interview transcription. The audio transcription was carried out by directly coding the identified experiences onto the audio track.

B.1 Identified experiences

Following section show the identified experiences from transcribed interviews and the ones directly coded on the audio track.

B.1.An Identified experiences - transcribed

Touchpoint: Startup Journey
Interview category Organizer

Int. cat.	Touchpoint\ experience	From Pos.	To Pos.	Coded extract from text
O	StartupJourney \Degree of working on own idea	21	21	Um aber etwas positiv zu sagen, bei den Gründungen bei der Gründungsgarage hab ich das super gefunden das wenn die Leute eine eigene Idee haben, dann denken die Leute auch in der eigenen Idee mit! Und das ist das nicht nur so eine fikitive, ja wir investieren 100 Millionen Euro und bauen in 5 Tagen ein neues SAP system. Sondern da betriffts ja mich und da wird dann intensiv daran gearbeitet. Ich glaub dass man mit diesen tools sehr viel lernen kann und da feedback geben kann und viele Bedenken beseitigt, dann sagt warum mach ich das eigentlich nicht.
O	StartupJourney \ role model peer: personal identification a. interaction	47	47	Ich glaube man muss da wirklich in Vorbildwirkung gehen. Also wenn ich an unsere Studierenden im konkreten denke und wenn da einer von der KNAPP, AVL oder McKinsey die Sterne vom Himmel holen. Man kann da wirklich positive und negative Beispiele herholen die dann inspirierend wirken. In der LV Unternehmensgründung (ich war auch zuständig für die LV) hab ich auch Podiumsdiskussion gemacht wo ich GründerInnnen eingeladen habe. Und vorallem auch Studierenden die gegründet haben. Also die waren den 1 bis 2 Schritte voraus. Die sind jetzt im Coworking space. und die gründen jetzt im nächsten Monat. Ich kann mich komplett damit indentifizeren. Der hat das gleiche studiert etc. Und das kommt total gut an.

O	StartupJourney \flipped classroom\ encouraging iterations (part of the game) - Consulting sit.	5	5	In meinem ursprunglichen Konzept sollte es ja ein "flipped classroom" sein. Das bedeuted dass die Studierenden eben anders als man es von der Schule gewohnt ist, wo man berieselt wird und zuhause die Aufgabe macht, es hier umgekehrt ist und die Studierenden konsumieren den Inhalt zuhause und kommen dann zu mir, mit den ausgefüllten Canvas und wir machen dort einen Workshop. Also arbeiten an der Idee. Weill das was sich vervielfältigen kann, nämlich den Transport des Wissen, das kann ich im mooc unzählig vervielfachen. Das wär meines Erachtens das "Geschäftsmodel" für die TU Graz gewesen. Das ich sage dieser mooc ist für alle zugänglich, für jeden. Egal ob ich ein Frisörgeschäft eröffnen möchte oder Studierender bin. Aber unsere Studierenden kommen in den Genuss das sie unsere LVs besuchen können, wo ihre Gedanken überprüft werden können. Weil wenn ich etwas gehört habe heißt es nicht das ich etwas anwenden kann. Und das wären so die Ideen und Gedanken dahinter gewesen.
O	StartupJourney \flipped classroom\ encouraging iterations (part of the game) - Consulting sit.	7	7	Die Studierenden kommen dann mit ihrer fertig ausgefüllten Idee zu mir, also es geht eigenlich in Richtung consulting im Bereich Entrepreneurship. Davon, glaube ich profitieren die Studierenden am meisten. Aber da gibt es viele Fragen von der TU Graz zu klären. Wie viele ECTS gibt es, gibt es Anwesenheitspflicht und wer überprüft ich die Anwesenheit. Das ist noch viel Arbeit zu leisten.
O	StartupJourney \Degree of one stop shop for all stages	12	12	Das Ganze hat ja auch Start up Journey geheißen, weil es soll ja auch eine Reise sein soll. Wir haben da wirklich sehr viele Teile ausgearbeitet. Wir haben 4 Prozessschritte eingebaut. Von der Idee bis zur Gründung. Aus diesen 4 Prozessschritten, also da hab ich mir auch meinen eigenen Prozess überlegt, hab ich auch erarbeitet welche Themen in den einzelnen Schritten notwendig sind. Inhaltliche Themen, welche übergreifenden Themen und welche begleitenden Themen (Do's and Dont's, Pitching etc.) Eigentlich wäre es ein Endkonzept, dass man da eine Start Journey mit der Überschrift: Geschäftsmodel oder Finanzierung, etc. So dass man eine Reise hat. Wenn ich es mit wenigen Worten benennen will: Ich hab schon versucht das skalierbar zu machen.

O	StartupJourney \As elective subject in every field of study to increase reach	3	3	Dann habe ich gesagt ok, es liegt es jetzt wirklich an der TU ob sie da ECTS vergeben möchte oder nicht. Meines Erachtens wäre es sinnvoll ewesen, man hätte da eine dementsprechen größere Reichweite gehabt. Ich bin aber ganz zufrieden, weil ich glaub es waren trotzdem ca. 180 Teilnehmer, ohne ECTS Punkte. Das zeigt auch deutlich den Bedarf an diesem aktuellen Thema. Aber ich denke wenn es irgendwie noch mehr Anklang finden sollte und auch fächerübergreifend interdisziplinär sein soll, macht es Sinn das als freies Wahlfach anzubieten. Ich war ja selber Studentin auf der TU Graz, und das ist eine sehr intensive Zeit die man dort durchlebt. Und wenn man nicht wirklich ganz konkret ein Interesse hat und das auch verfolgen möchte, dann ist die Zeit sehr beschränkt und dann macht man nicht einfach so irgendwelche Lehrveranstaltungen. Wenn man irgendwie sagt das würde mich interessieren und das kann ich mir auch als Freifach anrechnen lassen, natürlich mach ich das. Und dann interessiert es mich vielleicht so sehr, das da schon mal diese Sensibilisierung da ist, dass ich die Richtung stärker weiter verfolgen kann. Nur muss ich damit einmal in Berührung kommen. Jedoch sind unsere Studierende auf der TU schon so ausgelastet, dass sie nicht diese Freizeit haben, dass sie alles weiterverfolgen können was sie interessiert.
O	StartupJourney \early and permanent - like IAESTE internship	14	14	Wenn ich jetzt die Studierende nehme, dann wirklich von 0 weg. Weil dann denk ich mir, wenn ich ein Angebot schaffe, ich kann damit Interesse wecken. Eigentlich war mein Ziel auf der Universität, was ich immer gesagt habe, das Entrepreneurship bzw. die Gründungsgarage so bekannt wird wie ein IAESTE Auslandspraktikum. Das war mein Anspruch. Dementsprechend muss man da sehr früh beginnen. Wann entscheiden sie sich für ein IAESTE Auslandspraktikum? Sie haben das vielleicht schon mal irgendwann gehört. Vlt vor der Inskribtion oder bei den Welcome Days. Wenn sie so Feuer und Flamme sind gehen Sie schon in den ersten Semestern. Aber viele werden das sickern lassen sie werden immer mal wieder davon hören. Und denken sich irgendwann werd ich das einmal und machen das in einem höheren Semester. Und das war für mich der Anspruch, wir müssen eigentlich ab dem ersten Tag, ab den Welcome Days, Ich hab dann auch , versucht , zumindest bei den Maschinenbauern, die Gründungsgarage vorgestellt, das den Studierenden klar ist, das gibt es ein Angebot. Weil die Wirtschaftsingeneur Studiengänge haben ja noch eher einen Bezug zu Wirtschaftsinstituten, aber die anderen Studiengänge haben überhaupt keinen Touchpoint mit diesem Thema. Garnicht. Und auch auf den Wirtschaftsinstituten ist der sehr Tochpoint wenig, heißt es noch lange nicht wenn ich eine LV über Buchaltung mache das ich eher geneigt bin zu gründen. Dann kommt eher von einen TU Studierenden, für das wirtschaftliche haben wir eh einen BWLer. Es ist auch oft mit diesen abschätzigen Ton, weil man überhaupt nicht weiß, was der für eine Leistung bringt.
O	Startup Journey\Stage in Journey	15	15	Dementsprechend sehr ich das von Beginn weg bis zur Decision point. Natürlich je näher ich dem DfE bin desto mehr macht es Sinn.
O	Startup Journey\Stage in Journey	14	14	Ich glaube schon das es den ganzen vorderen Bereich betrifft. Also von 0 bis zur Decision for Entrepreneurship. Aber man unterscheiden welche Zielgruppe man betrachtet.

O	Startup Journey\flipped classroom\ encouraging iterations (part of the game) - Consulting sit.	23	23	Ja, zuerst einmal Awareness schaffen, Wissenstransfer und praktische Anwendung, an der, womöglich, eigenen Idee. Die Startup Journey kann dann als VO und UE gegliedert werden. Der Vorlesungsteil dient zur Awarenessschaffung und der Übungsteil (im Lehrkonzept des flipped classroom) als Consulting Teil, zum praktischen Arbeiten.
O	Startup Journey\Jobs to be done (hopes, fears and needs)	25	31	Hope: Die Möglichkeit das diffuse der Gründung greifbar wird. Ich verstehe was ein BM ist und welche Relevanz es für die Gründung. Ich kann das auch umsetzen und auf meine Idee anwenden. Needs: Ich lerne was ich brauche um ein BM zu erstellen. Fears:
O	Startup Journey\flipped classroom\ encouraging iterations (part of the game) - Consulting sit.	16	16	Nur wie wir alle wissen eine Idee wird nicht an einem Tag geboren. Ich mach keinen Businessmodel Canvas und am nächsten Tag gründe ich. Ich hab da ca. 37 Iterationen. Ich hab da mal ein einen BMC gemacht und dann schau ich mal ob ich eine Finanzierung bekomme und und dann fang ich mit den prototypen and anderen Dinge an. Dann kommen andere Meinungen. Dann eine Marktrecherche die das ergänzt. Dann ändern sich die Produkteigenschaften und komm ich drauf wie soll ich eigentlich Geld machen, überdenke meinen Revenue stream und überdenke was auch immer. Geh dann meine Felder durch und irgendwann bin dann soweit und jetzt könnte es funktionieren und gehe auf den Markt. Und meistens ist es dann die Gründung.
O	Startup Journey\One's own assumption being proven wrong	20	20	Das ist aber generell in den technoökonomischen LVs schwieriger. Weil im Vergleich zu anderen LVs, dieses "Wirtschaft" mit irgendwelchen Zahlenkonstrukten "ich saug mir was aus die Finger" was irgendwie so das mindset der Studierenden oftmals ist. Und es ist oftmals schwierig. Wenn ich sie jetzt eine strategische Entscheidung für ein Unternehmen treffen. Dann ist das in der Realität eine sehr hohe Tragweite. Dann muss in einem halben Jahr 10 Mitarbeiter entlassen. Oder mehr, in einen großen Unternehmen.

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Touchpoint: PhD_Tera

Interview category: Participant

E	PhD_Tera\Colleagues bring in different point of view\ Accepting ambiguity - part of the game	8	8	It is clear that you always have people that say it won't work. I think that is very valuable and necessary because you need the exchange with colleagues. Everyone has a different view on it, and you can discuss their ideas and so the solution goes a little bit in another direction. So, to transform a good idea into a very good idea.
E	PhD_Tera\Realization of self-efficacy by reflecting	38	38	I had no idea how much work it is going to be, I only imagined it's going to be a lot. But it will work out somehow. I had accomplished many projects at my workplace which was a lot of work. I took on the challenge of teaching, which I did not believe i would manage, but I did. So, everything I started new in my life somehow worked out. At least satisfying. So, I thought, why shouldn’t this one either?

E	PhD_Tera\Active in student organizations\competition events\ team spirit by competition setting	59	59	I do think so. I just recognize it by the people I know at TERA what projects they do beside their studies. That's very impressive. These students own this mindset and so they part in these student organization. They are active and out of the box thinking students.
E	PhD_Tera\Active in student organizations\competition events\ working in team on tasks that are defined by themselves	59	59	I do think so. I just recognize it by the people I know at TERA what projects they do beside their studies. That's very impressive. These students own this mindset and so they part in these student organization. They are active and out of the box thinking students.
E	PhD_Tera\Relationship to roles\Superior\ superior adds the last bit that enables decision	31	31	I mean I always was googling around on how to start company at some WKO (= federal chamber of economy) sites etc., but the eventual decision was made in the meeting with the former boss at the work place back then. I was not completely convinced before, I mean I wanted to do it, but he added the last ingredient. When he started by saying we can sell the license to some companies I told him that I actually wanted to do it realize it on my own. In turn he reacted very positively to my proposal and hence, the decision was made.
E	PhD_Tera\Relationship to roles\Superior\triggered with neg. motiv. positive motiv. on the long term	17	17	I have to say, it wasn't easy sometime at nights. When people, you look up to, and they go like "No, forget about it". Then you really think intensively about it. But this motivated me a lot and made me think, I am going to show you! I mean tried in the past some other ideas but none of the really worked out. However, this idea developed very well. Yeah it was not easy overall, because you think, well, are these critiques justified and can they be true? But I had to make a decsion.

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Touchpoint: Startup Spritzer

Interview category: Participant

P	StartupSpritzer\ Ecosystem in general\ Entrepreneurial will present. Lack of ideas hinders progress	7	7	Ich würde mich zwischen Awareness und Idea sehen. Weil es war nicht nur die Awareness und sondern auch das Bedürfniss das zu verfolgen. Aber dadurch dass es ein Bedürfniss war, war etwas Druck da und hat das weitere fortkommen gehindert. Zwischenzeitlich war das Ziel Unternehmertum, um den Unternehmertum willen. Also das ist für mich ein falscher Ansatz. Quasi eine Glorifizierung des Berufsbildes.
P	StartupSpritzer\Ecosystem in general\Last bit missing - unmet need	9	9	Man braucht eine Idee von der man sicher ist dass sie funktioniert. Eine Überschneidung, zum Einen was gebraucht wird, was man selber liefern kann und was durchführbar ist. Schlussendlich hat irgendwie der letzte Funke gefehlt damit ich überzeugt war.

P	StartupSpritzer\Ecosystem in general\Latent need.	11	11	Ich glaube wir waren zu verkrampft. Wir brauchen etwas und dadurch wollten wir irgendwas erzwingen. Dadurch hatten wir keinen freien Kopf. Aber es ist schwierig zu sagen war wir gebraucht hätten. Das Problem ist, da der Fall ja nicht eingetreten ist (den Punkt der Idee nicht erreichten) kann ich nicht rückblickend sagen was ich gebraucht hätte.
P	StartupSpritzer\Ecosystem in general\ personally told story and explanations	31	31	Sehr wichtig. Für mich ist es sehr wichtig das persönlich von jemanden zu erfahren und erklärt bekommen.
P	StartupSpritzer\Ecosystem in general\Internal validation - Influence	35	35	Ich muss es zuerst für mich selbst validieren. Also eine interne Validierung durchführen und wenn die den Test nicht besteht mit allen 3 Punkten, werd ich ess auch nicht extern validieren?
P	StartupSpritzer\Ecosystem in general\known need - not addressed	43	43	Es ist schwierig, weil aus dem engeren Umfeld bekommt eher keine objektive Meinung und es jeden erzählen möcht ich auch nicht.
P	StartupSpritzer\Ecosystem in general\known need - not adressed	45	45	Prinzipiell glaub ich ich nicht das es so schwierig ist, die externe. Aber wenn meine interne Validierung schon negativ ist dann kommt garnicht zur externen.
P	StartupSpritzer\Ecosystem in general\known need - not addressed	49	49	Ich glaube das fact driven wichtiger ist. Man muss selbst überzeugt sein dass man es kann. Und bei mir ist auch das "fact driven" das was fehlt

B.1.B. Identified experiences - Direct code on audio track

Touchpoint: Social Entrepreneurship lecture

Interview category: Organizer

Int. Cat.	Touchpoint\experience	From	To
O	Social entrepreneurship lecture\Design Thinking Process\Innovation styles: addressing people’s unaddressed needs/strength\ by right question framing beforehand	0:22:57,4	0:25:20,5
O	Social entrepreneurship lecture\Teambuilding\Participants choose team based by their interests in the topic	0:27:47,9	0:29:12,7
O	Social entrepreneurship lecture\Presentation\4MAT: Debriefing - Reflection - manifestation of learnings	0:33:19,0	0:35:42,2
O	Social entrepreneurship lecture\university project led to unintended product/market fit	0:44:28,0	0:46:09,0
O	Social entrepreneurship lecture\Innovation styles: \ to be asked what's your idea?	0:51:40,2	0:53:04,8
O	Social entrepreneurship lecture\Student Project Bus system in Community	0:41:58,0	0:54:30,0
O	Social entrepreneurship lecture\ real life product development	0:58:48,0	0:59:41,7
O	Social entrepreneurship lecture\Design Thinking Process\ Discovery of latent entrepreneurial skills	0:59:44,0	1:00:09,9

O	Social entrepreneurship lecture\Design Thinking Process\ experience that ES in beg. is matter of perception rather skills	1:22:47,0	1:23:40,3
O	Social entrepreneurship lecture/Sustainable product development (lecture) in Berlin\Debriefing \happenstance or systemic - experience of lean approach	1:27:25,8	1:30:49,0
O	Social entrepreneurship lecture\After presentation/Socializing \Thank you part\Thankfulness for contribution	0:35:37,0	0:36:21,5
O	Social entrepreneurship lecture\After presentation/Socializing\ Thank you part\Appreciation for contribution	0:35:37,0	0:36:21,5
O	Social entrepreneurship lecture\Design Thinking Process\ Innovation styles: addressing people's unaddressed needs/strength	0:14:05,2	0:14:42,9
O	Sustainable product development (lecture) in Berlin\Debriefing \Reflection/Debriefing to better realize learnings	1:24:39,1	1:26:15,3
O	Social entrepreneurship lecture\Teambuilding\Participants choose team based by their interests in the topic	0:19:08,0	0:21:11,6
O	Sustainable product development (lecture) in Berlin\ Process\Doing on their own - if needed consultancy	1:24:39,1	1:26:15,3
O	Social entrepreneurship lecture\Design Thinking Process\ Assumption of task giving entity being proven wrong	0:16:25,6	0:17:38,0
O	Social entrepreneurship lecture\Design Thinking Process\ Rational comparison of one's capabilities after interaction	0:36:23,0	0:37:19,0
O	Social entrepreneurship lecture\After presentation/Socializing\ Thank you part\Relationship to roles: By role model peer	0:35:37,0	0:36:21,5
O	Social entrepreneurship lecture\After presentation/Socializing\ Thank you part\in front of peer and role model group	0:35:37,0	0:36:21,5
O	Social entrepreneurship lecture\After presentation/Socializing\ Thank you part\MOT	0:35:37,0	0:36:21,5
O	Social entrepreneurship lecture\Design Thinking Process\ experience that ES in beg. is matter of perception rather skills	1:12:02,3	1:20:41,0
O	Social entrepreneurship lecture\Design Thinking Process\ Acting role model influence	1:22:09,0	1:22:50,1

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Touchpoint: Product Innovation Project

Interview Category: Organizer

O	Product Innovation Project\Teambuilding\emotional experiences \conflict solving - different cultures/ English language	0:20:57,0	0:21:30,0

O	Product Innovation Project\Teambuilding\emotional experiences\Project Manager - Motivation of the Team	0:21:38,8	0:21:51,6
O	Product Innovation Project\Preps of Final Gala\ Pushing to good performance - results pay off	0:21:51,4	0:22:26,3
O	Product Innovation Project\Teambuilding\emotional experiences\experiencing frequent up and downs	0:22:40,0	0:22:49,0
O	Product Innovation Project\During year\supervisor informs /guides students about emotional journey	0:24:01,7	0:24:43,2
O	Product Innovation Project\During year\push and pull to maintain student's momentum and initiative\ Basic tools/experiences for innovation process (goal FoD)	0:27:15,4	0:27:55,2
O	Product Innovation Project\Debriefing/Feedback\Become sensitized with topic, they are capable to innovate	0:37:47,8	0:38:31,6
O	Product Innovation Project\During year\push and pull to maintain student's momentum and initiative	0:41:25,0	0:42:04,5
O	Product Innovation Project\During year\emotions involved make learning/experiences stick better	1:07:26,8	1:09:05,1
O	Product Innovation Project\Debriefing/Feedback\opportunity offered/follow up	1:00:09,9	1:00:52,1
O	Product Innovation Project\Debriefing/Feedback\Lack of Self efficacy. Ideas vs. Want to become an Entrepreneur	1:01:15,0	1:03:26,0
O	Product Innovation Project\Debriefing/Feedback\Awareness of facilitating resources - getting companions	1:03:53,6	1:05:13,7

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Touchpoint: Product Innovation Project

Interview category: Participant (3)

P	Product Innovation Project\Application phase\Influence on the solution of problems of local companies -	0:01:16,0	0:02:34,8
P	Product Innovation Project\During year\addressing motivations of PM and team members	0:03:16,0	0:04:56,0
P	Product Innovation Project\During year\treated as employee not student	0:16:12,7	0:16:31,1
P	Product Innovation Project\During year\student's main driver is their learning impact	0:12:39,7	0:13:41,8
P	Product Innovation Project\During year\equipping them with tools about they can apply in everyday life	0:18:51,0	0:20:01,0
P	Product Innovation Project\During year\Teaching tools of Intrapreneurship	0:23:17,3	0:25:05,3
P	Product Innovation Project\Final Gala\presenting student's decision than companies	0:29:40,6	0:30:14,9
P	Product Innovation Project\Debriefing/Feedback\ Awareness - you are capable of becoming an entrepreneur	0:31:33,1	0:32:39,8
P	Product Innovation Project\During year\Where is the learning? - do not deliver on the job	0:37:42,2	0:38:24,0
P	Product Innovation Project\Debriefing/Feedback\Lack of Ideas hinder entrepreneurial will	0:15:18,9	0:15:50,4
P	Product Innovation Project\During year\measuring the right things for success/progress	0:16:22,9	0:17:19,0

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Touchpoint: Startup Forum Alpbach

Interview category: Participant

P	Startup Forum Alpbach\Application Phase Forum Alpbach\ MOT: Employer disagrees eventually working for further on the idea	0:34:04,6	0:38:07,2

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Touchpoint: Product Innovation Project

Interview category: Participant (2)

P	Product Innovation Project\During year\whole process of product development - big picture	0:09:20,0	0:10:03,0
P	Product Innovation Project\During year\MOT: Networking	0:06:46,0	0:07:26,0
P	Product Innovation Project\Debriefing/Feedback\ Part of the big puzzle on how start up and where at journey	0:43:07,0	0:44:12,4
P	Product Innovation Project\Debriefing/Feedback\ opportunity offered/follow up	0:47:36,3	0:48:21,7
P	Product Innovation Project\During year\presence of relevant role model/superior during year	0:55:45,0	0:56:29,0
P	Product Innovation Project\Preps of Final Gala\ Preps are most memorable	1:04:22,9	1:05:34,0
P	Product Innovation Project\During year\push and pull to maintain student's momentum and initiative\ Basic tools/experiences for innovation process	1:15:05,5	1:15:28,4
P	Product Innovation Project\During year\equipping them with tools about they can apply in everyday life	1:15:05,5	1:15:28,4

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Touchpoint: Product Innovation Project

Interview category: Participant (1)

P	Product Innovation Project\During year\free working and fuzzy front end	0:06:00,0	0:07:44,0
P	Product Innovation Project\During year\focus on relationships	0:07:59,0	0:12:57,0
P	Product Innovation Project\During year\Feedback round to PM	0:15:08,0	0:16:51,0
P	Product Innovation Project\During year\Compelling video influences career choice	0:20:01,0	0:21:18,0
P	Product Innovation Project\During year\Independence from Company more free decision making	0:25:31,0	0:28:14,0
P	Product Innovation Project\During year\MOT - did not deliver on the job disappointed by the company	0:36:57,7	0:38:23,0
P	Product Innovation Project\During year\MOT: Disappointed by company	0:39:34,0	0:40:51,0
P	Product Innovation Project\During year\Learning accounting - Journey of ideas	0:45:40,0	0:47:37,0
P	Product Innovation Project\During year\MOT: Communication with company	1:02:59,1	1:04:37,0

P	Product Innovation Project\During year\focus on relationships (goals)	1:07:40,0	1:08:18,5

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Touchpoint: Product Innovation Project

Interview Category: Entrepreneur

E	Product Innovation Project\Ecosystem in general\Little Successes and regular feedback along a touchpoint	0:53:04,0	0:55:30,6
E	Product Innovation Project\During year\MOT: Supervisor joins trips gives extraordinary help	0:08:48,0	0:09:37,5

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Touchpoint: Robocup

Interview category: Entrepreneur (1)

E	Robocup\competition events\similar skill in startups as in student orgs esp. comeptition\reaching goals in a team	0:00:38,0	0:01:13,5
E	Robocup\Active in student organizations\competition events\similar skill in startups as in student orgs esp. competition\execution of own ideas within a team	0:00:38,0	0:01:13,5
E	Robocup\Active in student organizations\competition events\similar skill in startups as in student orgs esp. competition\ solving problems withing a team	0:00:38,0	0:01:13,5

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Touchpoint: Greentech Jam

Interview category: Organizer

O	GreentechJam\different way of thinking - engineering - humanities	0:06:06,8	0:07:46,1
O	GreentechJam\2 Domains, fertilizing each other	0:06:06,8	0:07:46,1
O	GreentechJam\Debriefing/Feedback/ Awareness of facilitating resources - getting companions	0:10:49,0	0:16:06,0
O	GreentechJam\realization the need of a team for product development	0:20:40,0	0:22:22,0
O	GreentechJam\students teach company responsible	0:25:08,0	0:26:34,0
O	GreentechJam\lower barriers to develop idea further - teammates there	0:30:14,2	0:30:45,3
O	GreentechJam\reflection on how much they made in that short time	0:40:15,5	0:40:36,8

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Touchpoint: Wirtschaftsgeist

Interview category: Organizer

O	Wirtschaftsgeist\Design Thinking Process\humanities domain expertise useful in business	0:16:01,2	0:16:55,4

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Touchpoint: Startcamp

Interview Category: Organizer

O	Startcamp\your personal field to improve becomes topic of the group	0:22:36,0	0:23:30,4

O	Startcamp\breaks\breaks (change of settings) increases interaction/ success of evening	0:42:53,5	0:44:16,0
O	Startcamp\realization of own expertise by working among other expertises	1:00:46,2	1:02:42,3

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Touchpoint: Venturepreneurship Aula

Interview Category: Organizer

O	Venturepreneurship Aula\conveying reachability and lower barrier for contact to rolemod	0:26:25,1	0:27:44,0
O	Venturepreneurship Aula\nature/type of idea / degree of profitability	0:35:29,5	0:36:07,3
O	Venturepreneurship Aula\perceived overload of jobs to be done for founding (goal)	0:44:24,0	0:49:15,0
O	Venturepreneurship Aula\first testing and then founding awareness	1:11:46,3	1:13:09,3

No experiences were identified from following interviews:

Science Park (Organizer); Startup Playground (Organizer); Robocup (Entrepreneur (2)

B.2.A. Interviews - transcribed

Touchpoint: Startup Spritzer

Interview Category: Participant

1	Wie würdest du deine Erfahrungen beschreiben mit Unternehmertum und Innovation?
2	Das ist eine sehr offene Frage. Sehr allgemein habe ich Unternehmertum so warhgenommen, dass man die Möglichkeit hat, seine Ideen umzusetzen und dadurch einen Beitrag zu leisten. Inwiefern man ein Bedürfnis sieht und Gesellschaft sieht und das Bedürfnis zu befriedigen. Und dass man darauf Einfluss nehmen kann und selbst eine erfüllende Aufgabe macht. Das ist meine Auffassung
3	Welche Erfahrungen im speziellen gemacht?
4	Aktiv habe ich noch keine Erfahrungen gemacht, sondern nur eben theoretisch, wie das aussehen kann und wie man das umsetzen kann. Aber schlussendlich hat das nicht in Aktionen geendet. Aber meine Erfahrung waren dass ich gesehen wie gewisse Personen in meinen Umfeld, die eine Idee hatten, die auch umgesetzt haben. Und wie ich das beobachtet habe, auch wenn sie nicht erfolgreich waren, hat ihnen das persönlich sehr viel gebracht. Und sonst
5	hauptsächlich mit Literatur und auch Gespräche mit gewissen Personen die gegründet haben. Gesproche haben wir über die Einstellung, wie man das umsetzt und was es alles braucht um zu gründen.
6	Wenn wir deine Situation hier auf der Journey einzeichnen würden, in welcher Phase würdest du dich sehen?
7	Ich würde mich zwischen Awareness und Idea sehen. Weil es war nicht nur die Awareness und sondern auch das Bedürfniss das zu verfolgen. Aber dadurch dass es ein Bedürfniss war, war etwas Druck da und hat das weitere fortkommen gehindert. Zwischenzeitlich war das Ziel Unternehmertum, um den Unternehmertum willen. Also das ist für mich ein falscher Ansatz. Quasi eine Glorifizierung des Berufsbildes.
8	Wie würdest du die Schwierigkeit beschreiben? Was brauchst du um weiterzugehen in der Journey?
9	Man braucht eine Idee von der man sicher ist dass sie funktioniert. Eine Überschneidung, zum Einen was gebraucht wird, was man selber liefern kann und was durchführbar ist. Schlussendlich hat irgendwie der letzte Funke gefehlt damit ich überzeugt war.
10	Was hätte da helfen können in deiner Situation?
11	Ich glaube wir waren zu verkrampft. Wir brauchen etwas und dadurch wollten wir irgendwas erzwingen. Dadurch hatten wir keinen freien Kopf. Aber es ist schwierig zu sagen war wir gebraucht hätten. Das Problem ist, da der Fall ja nicht eingetreten ist (den Punkt der Idee nicht erreichten) kann ich nicht rückblickend sagen was ich gebraucht hätte.
12	Wenn man es bildlich beschreibt, dass in jedem von uns eine Flamme brennt selbst eine Idee umzusetzen und Unternehmer zu werden. Aber diese brennt unterschiedliche stark. Wie stark muss die Flamme von außen entfacht werden oder kann man das garnicht?
13	Ich glaube in jedem muss sie zu ein gewisser Stärke brennen. Aber auch wenn man selbst die Möglichkeiten hat und die Flamme schon etwas brennt, muss von außen auch eine Hilfe kommen. Zum Beispiel, dass man sieht, das ist möglich, das haben auch schon andere gemacht. Also eine Art von Vorbild. Auch über Community des Ökosystem in Graz, das ich als sehr stark wahrnehme.
14	Zum Thema: Es sich selber zutrauen. Was es hätte da benötigt um deine Flamme stärker zu entfachen?
15	Ich traus mir schon zu. Prinzipiell habe ich das Gefühl man muss sich zuerst überlegen was man machen will und dann informiert weiter und geht zu Veranstaltungen etc
16	Also du meinst sich klar werden das möcht ich machen. Wie würdest du das prinzipiell sehen, kann bzw soll man da auch vom

Ökosystem aufgenommen werden wenn man nur den Willen hat Unternehmer zu werden, noch aber keine Idee hat?

17 Die von der Eignung her, nicht perfekt zum Unternehmer neigen können es auch unter Umständen es schaffen.

18 Entschuldigung, die Frage war ob auch schon vor der Idee, die Journey los gehen kann bzw. ob man da vom Ökosystem aufgenommen wird ob es da ein Service gibt?

19 Ich hab schon so wahrgenommen das man sich einbringen kann und auch im Thema einarbeitet was auch in folgenden Schritten dann passiert. Und vielleicht kommt die Idee später. Aber auch wenn man nicht selbst Unternehmer wird stelle ich fest das man da sehr viel aus diesem Bereich lernen kann, weil es interessant ist und auch für andere Lebensberreiche was mitnehmen kann und das es einem persönlich schon weiterbringen kann.

20 Zur Ideenfindung selbst. Gibt es da Unterstützung?

21 Ich finde nicht. Ich finde es gibt extrem viel wenn man mal ein Idee hat da gibt die Gründungsgarage etc, aber bis zu dem Punkt bis mann weiß was man machen will habe ich praktisch nichts wahrgenommen.

22 Hast du da nach Unterstützung gesucht?

23 Ich hab mich informiert wie Ideen zustande hab aber nichts hilfreiches für mich entdeckt. Es gibt ein paar gute Ansätze, es hat mich nicht weitergeholfen.

24 Wie würdest du den Bedarf einschätzen, glaubst du bist du damit alleine?

25 Ich glaub das der Bedarf sicher da. Es gibt genug Leute die ich kenne die gründen würden bzw. das weiterverfolgen wollen wenn sie eine Idee hätten.

26 Ich zeichne hier bei der Journey ein Pool von Leuten ein die sich auf der Journey befinden und wo glaubst du fallen die meisten Leute raus?

27 Ich glaube das zwischen Awareness und Entscheidung für Unternehmertum viele Einzelschritte sind. Ich glaube man überlegt von "ich will ich das" zu "ich kann das" nach "wie mach ich das" und "was fehlt mir". Ich glaube das die meisten beim "wie mach ichs" rausfallen dann weiter in der Journey und natürlich die meiten am Anfang "ich wills nicht" und "ich kanns nicht"

28 Wo würdest du dich einzeichnen. Also ich traus mir zu aber ich weiß nicht wie ichs machen soll.

29 Ca. kurz vor der Idee von der ich überzeugt sein muss.

30 Weil du vorher das Thema Vorbild angeschnitten hat. Wie wichtig sind solche persönlichen Kontakte mit Vorbild?

31 Sehr wichtig. Für mich ist es sehr wichtig das persönlich von jemanden zu erfahren und erklärt bekommen.

32 Noch mal zurück zur Idee. Was muss da sein um zu sagen jetzt bin ich von einer Idee überzeugt.

33 Das ist eine gute Frage. Ich glaube es muss eine Überschneidungsmenge geben von meinen Fähigkeiten in diesem Bereich, ein herschendes Kundenbedürfniss und das ich überzeugt bin dass es finanziell durchführbar ist, da sein

34 Jetzt angenommen du bist überzeugt das es da eine Überschneidungsmenge gibt. Wie überprüfst du das du alle Bereiche richtig validierst?

35 Ich muss es zuerst für mich selbst validieren. Also eine interne validierung durchführen und wenn die den Test nicht besteht mit allen 3 Punkten, werd ichs auch nicht extern validerien?

36 Wie schaut eine gute externe Validierungsphase aus?

37 Für mich sehe ich diese externe Validisierungsphase erst sehr spät in der Journey jedenfalls nach dem man weiß was man machen will.

38 Was hat bis jetzt gefehlt von den Elementen damit du von deiner Idee überzeugt wird.

39 Das Kundenbedürfniss.

40 Wie würdest du dir ein gutes Service vorstellen die diese Lücke schließen kann?

41 Das ist eine schwierige Frage. Ich habe keine Ahnung.

42 Du hast jetzt eine grobe Idee. Du schätzt es wirtschaftlich durchführbar aber du kennst eben das Kundenbedürfniss nicht, richtig?

43 Es ist schwierig, weil aus dem engeren Umfeld bekommt eher keine objektive Meinung und es jeden erzählen möcht ich auch nicht.

44 Warum glaubst du ist es so schwierig?

45 Prinzipiell glaub ich ich nicht das es so schwierig ist, die externe. Aber wenn meine interne validierrung schon negativ ist dann kommt gar nicht zur externen.

46 Was müsste sich an TU Graz ändern damit mehr sich mehr Leute für Entrepreneurship entscheiden? Als Universität bzw. andere Stakeholder

47 Ich glaube die Universität macht schon viel auf diesem Gebiet. Es gibt aber keinen Touchpoint der einen klar macht das du das auch kannst. Also in der Phase vor der Idee und auch danach. Ich glaube das viele Studiengänge nur darauf ausgelegt sind um Arbeitnehmer zu produzieren. Dass man es einfach mal in den Raum stellt. Als Verfahrenstechniker interagiert man mit dem nicht.

48 Um auf der Journey weiterzukommen. Was ist deine Meinung nach wichtiger, generell, und nicht auf deine Person bezogen. Das "person driven" oder "fact driven" Unterstützung

49 Ich glaube das fact driven wichtiger ist. Man muss selbst überzeugt sein dass man es kann. Und bei mir ist auch das "fact driven" das was fehlt

50 Wie würdest du das Angebot an diesen zwei Bereichen ("fact - und person driven") sehen in unserem Ökosystem?

51 Ich glaub das es mehr Angebot gibt an person driven.

52 Glaubst du das man den Teil lernen kann, Zwischen Awarenss und Idea?

53 Ich glaube schon dass man das lernen kann aber man braucht natürlich auch die Persönlichkeit dafür!

Touchpoint: PhD_Tera

Interview category: Entrepreneur

1 What excites about being an entrepreneur?

2 The diversity. If you are an entrepreneur, there is no day that's similiar to one another. Especially in the startup phase, you can do every day something new. One writes a businessplan, that requires a couple of days, but in the next week one does something different.

3 How come you became an entrepreneur?

4 I did not consider it at all. I thought I would work in a classic larger corperation. During my thesis, I got the task to measure certain material properties. However, I had not been too successfull working on the task. Further it was placed in a basement (without windows) for 2 years. I somehow could not solve the task. But then at some point I had a lightbulb moment. I had an idea for something new. Subsequently i build a prototype and realized, "wow that's super cool!". Then I wrote an application for an invention and submitted it. Then I thought what I can do with it. Maybe some other company pays for the patent. What if I go realize the idea into something like a product, but I perceived the market would be too small. I would'nt earn anything. But since I put in my heart and soul and invested so much energy I thought over it again. Imagined it would just move to the shelf, which would be a pitty. Then I dealt with it more thoroughly and thought what if go work it out on my own and considered the steps are necessary to start it up. And so the idea became more and more mature .

5 With which touch points did you interact with along the way to realize the patent? (E.g.: in form of conversations or participation of events?)

6 This was actually the second patent application in the framework of the thesis. The progress first patent application experienced a lot of resistence by the project partner. They truly did not believe in it. But this actually increased my motivation to work further on it. With the help of my other collegues I lead the conception to a prototype, undercover, and presented it.

7 Who were they? (rolemodels, etc)

8 It's clear that you always have people that say it won't work. I think that's very valuable and necessary because you need the exchange with collegues. Everyone has a different views on it and you can discuss their ideas and so the solution goes a little bit in another direction. So to transform a good idea into a very good idea.

9 Was it that moment, with the patent being finished for application, or when do you think you decided for yourself: "I want to become entrepreneurial active!"

10 Actually I did not think at all about to become entrepreneurial active, in the beginning. I was happy about the application itself. A patent seems like a big thing, however later one you realize it's just the right that someone else can't claim this invention its own and not a right to become rich yourself. And it takes a lot of time as well as money.

11 Anyway, I did not think about to become entrepreneurial active during filing the application, but rather after submitting it. I thought then, what will happen if a company buys the license and how likely is it eventually that this idea will actually be build. I imagined some company could acquire the patent for some 1000 euros and then maybe they think there is not a enough market so it's not gonna pay off and so it might never gonna be built. And this was what I wanted it to prevent it from

12 Why?

13 Why? Because my lifeblood was attached to it. In the end I achieved something valuable myself I felt and I wanted to carry the baby out to the world and so preventing it from gathering dust on the shelf.

14 You said there were a couple of people that doubt the success of the idea?

15 Well, they are still around, but they become less!

16 How did that critique influence your motivation?

17 I have to say, it wasn't easy sometime at nights. When people, you look up to, and they go like "No, forget about it". Then you really think intensively about it. But this motivated me a lot and made me think, I am gonna show you! I mean tried in the past some other ideas but none of the really worked out. However, this idea developed very well. Yeah it was not easy overall, because you think, well, are these critiques justified and can they be true? But I had to make a decsion.

18 Why did this negative critique motivated you?

19 Because I am stubborn. If I am boosted into something, I want to pull it through until I really fall flat on my face.

20 How come you boost yourself into something. Which factors help you to get in this condition?

21 I don't know, if I am interessted I wanna do it.

22 How did external factors (a person from outside encourages you, facilitating resources appear to move on the project) influence your progress?

23 What I said already, you need the exchange with your surrounding, being able to transform a good idea into a great idea. The light bulb moment was not in Graz in laboratory in a basement. A collegue showed me a new material and I touched it and realized with this material I can do it. Then many conversation followed including the guys at the workshop on how to turn it into a working prototype etc. You definitely need certain to team around you

24 In this phase right after the light bulb moment, what would you have wished for, in order to move the idea faster and easier to its realization?

25 That i earler had the opportunity to access such a maker lab. In the end of the day I think one is somehow very depended on the network that is existing at the institute. Many workshops have good people in there but offer rather less support. I had the luck that I found someone that I could excite for my idea. To have experienced people that have build such a thing. And this was really helpful.

26 What else would you have wished for back then?

27 I had so many little wishes back then. I struggled with the most trivial things and spend so much time on google looking for certain components. In the end I had to do the jobs of a product developer and from my bosses none had an idea about it. So a better coaching in this fields had helped a lot back then. And when I came to the local incubator the product

was almost done. Only little design changes were implemented.

28 Why did you get so late to the local incubator?

29 Due to the my ongoing work for my thesis, the teaching duty and the attendance on many conferences, I had no time for the Science Park yet. On the other hand it was an advantage because I received several valuable ideas on how to enhance the diversity of the product's application by exchanging with my collegues at the conferences. Since the target group are experts in the industry and in academic research.

30 When would you pin down the time you decided to become entrepreneurial active?

31 I mean I always was googeling around on how to start company at some WKO (= federal chamber of economy) sites etc, but the eventual decision was made in the meeting with the former boss at the work place back then. I was not completely convinced before, I mean I wanted to do it but he added the last ingredient. When he started by saying we can sell the license to some companies I told him that I actually wanted to do it realize it on my own. In turn he reacted very postively to my proposal and hence, the decision was made.

32 And when looking at the timeline, before that final touch points in the meeting? What happend there before?

33 I informed myself a lot about how one could start a business. Gathering infos and to learn about the whole endeavor. I would not call it knowldge gatheting but rather pieces of information.
34 Then you need anyway to move on, I had a working prototype but it with a low usability etc.

35 Have you actually attented some start up events?

36 I did not actually. I only joined very late. Way after the decision. So it seemed not relevant to me before becoming entrepreneurial active.

37 What was your opinion on your capabilities to master the entrepreneurial journey beforehand?

38 I had no idea how much work it's gonna be, I only imagined it's gonna be a lot. But it will work out somehow. I had accomplished many projects at my workplace which was a lot of work. I took on the challenge of teaching, which I didn't believe i would manage, but I did. So everything I started new in my life somehow worked out. At least satisfying. So I thought, why should'nt this one either?

39 Before your decision, have you experienced events/occasions of any kind that fostered your way to become entrepreneurial active?

40 There was a long and formative conversation (but after the decision) with a collegue working at a partner company of my former workplace. And he advised me during the product development phase that I have to channel all my energy now and put everything in, otherwise it's going to fail. He was very doubtful of the product to be successful. Then I got in little depressed but rised from it with a momentum.
41 And sure, there were a lot students that helped me a lot to push this further and gave me a lot of energy. You also get different points of view on the product development.

How was the role model influence in that time?

I think this was something I have missed a little. I would have moved faster with it, but I am very satisfied how it went.

The work as an entrepreneur, what is it, that makes that career choice more valuable compared to others?

The freedom. You have a few guidelines from the law but all the other things you can decide on your own. In my former jobs I suffered quite a little by the decisions made from top managment, which I couldn't influence. The funny thing is that in my private/familiy life there was no entrepreneneur around. So it wasn't the case I was looking up to someone.

Before your decision, how did you perceive the advantages that would came along with being an entrepreneur?

Well money was never a motivator. Sure, I wanted to keep my standard of living but I didn't and still don't want to become rich. Very much like the modern lifestyle, renouncing to become rich but therefore more freetime

What kind of picture did you have about the being entrepreneur?

It was about realizing the idea and putting it into practise.

How would it have influenced your decision to become entrepreneurial active, if your institute offered you all the freedom and you could work on your idea within the TU Graz? An intrapreneurial approach

This would be a great offer. The main point to me was to realize my own idea. Being able to say: "Look, this is what I have done". To see my baby grow. That's the crucial matter. If I was a pure salesman of laboratory products, I would be very unlucky.

What do you think has to be improved at our universWhat do you think has to be improved at our university's system for many more entrepreneurs, like you are, to emerge?

I think our university is doing a great job. When I look back ca. 10 years when I started studying, there was no institution like a Incubator and all the events that come along with the hype. Everyone as i perceive it has the start up feeling nowadays. TV shows appear on that matter etc. I perceive the start up eco system in Graz s very well exectuted.

What I would improve is the presence of rolemodels. This is what I missed in my time. I don't however, know how to better implement or communicate this. I mean there is my former professor who now starts telling little stories during the lecture about i.e. Dyson vacuum cleaner, that earned millions with this technology and further focuses depper on the technology part. And this can be inspiring. You draw the student's attention to it. As I attented this lecture it was back then, it was only a dry discourse. I think the story and the technology would stick way better in the students' mind when you combine them to convey a lively experience to better reach the students. And at some other ocassion a student suddenly has an idea might remember the story and might have a different and hopefully more positive approach towards regarding pursuing this idea!

What else?

What crosses my mind is the course product innovation project. I unfortunately have never attened it, but to me it appears very spot on in terms pathing the way towards entrepreneurship and innovation

What I did was joining TERA (student organisation for fuel efficient racing car) I was part from the very beginning until the world record. It all started in the fuel cell laboratory with the vision: "Let's build the most efficient car in the world". We had no money but the vision. We had a T-shirt on with a self-ironed picture with sketch of our car and this way we were sitting in front of the rector presenting our idea, back then. Then we became the best newcomer at the first event and at some point we have beaten the ETH Zurich and achieved the world record. This is also something what fosters the mindset regarding competitiveness, spirit and development. From 0 to the world record. The spirit you experience there is very defining.

Should then more students get "distracted" from predefined curricula and directed towards these student organisation?

I do think so. I just recognize it by the people I know at TERA what projects they do beside their studies. That's very impressive. These students own this mindset and so they part in these student organisation. They are active and out of the box thinking students.

Touchpoint: Startup Journey
Interview category: Organizer

1 Wie zufrieden waren Sie mit der LV "Start up Journey"

2 Da gibts auch viele Gesichtspunkte wie zufrieden dass man da ist. Bei der Erstellung welche Studiengänge das in ihren Portfolien haben bin ich mäßig zufrieden. Insofern, auf der einen Seite, ist es mir gelungen dass auf die Beine zu stellen. Auf der anderen Seite, ist sehr viel Energie, die da aufgewendet wurde, die dann auch verpufft ist, weil die Universitäten momentan, noch nicht so weit geöffent sind, dass sie diese Kreativität und Innovation zulassen. Es ist natürlich teilweiße schon verständlich da es Curriculla gibt und wo es leider so festgefahren ist welche LVs es gibt. Aber gerade in dem Bereich wo es derzeit nicht viel gibt und wo es Aufholbedarf gibt, ist es dann finde ich sehr schwierig für Personen die das Engangement zeigen und das wollte ich auch, weil es mir ein großes persönliches Anliegen ist da was weiterzubringen, dass man es auch wirklich auch schafft. Von Insitutsseite, also von meinem Professor, wurde es schon unterstützt und sowie auch vom F&T Haus, das war sehr wichtig zur Umsetzung. Großen Dank an das F&T Haus für Unterstützung, weil das Institut hätte das nicht alleine finanziell nicht geschafft und wäre nicht zustande gekommen. Als das ist die Organisatorische Seite.

3 Und was auch bis jetzt schwierig ist, ist das man dafür ECTS Punkte vergibt. Ich hab das dann irgendwann zu Ostern, wo mein Dienstverhältnis auch schon lange beendet war, es dann aufgegeben das zu verfolgen. Dann habe ich gesagt ok, es liegt es jetzt wirklich an der TU ob sie da ECTS vergeben möchte oder nicht. Meines Erachtens wäre es sinnvoll ewesen, man hätte da eine dementsprechen größere Reichweite gehabt. Ich bin aber ganz zufrieden, weil ich glaub es waren trotzdem ca. 180 Teilnehmer, ohne ECTS Punkte. Das zeigt auch deutlich den Bedarf an diesem aktuellen Thema. Aber ich denke wenn es irgendwie noch mehr Anklang finden sollte und auch fächerübergreifend interdisziplinär sein soll, macht es Sinn das als freies Wahlfach anzubieten. Ich war ja selber Studentin auf der TU Graz, und das ist eine sehr intensive Zeit die man dort durchlebt. Und wenn man nicht wirklich ganz konkret ein Interesse hat und das auch verfolgen möchte, dann ist die Zeit sehr beschränkt und dann macht man nicht einfach so irgendwelche Lehrveranstaltungen. Wenn man irgendwie sagt das würde mich interessieren und das kann ich mir auch als Freifach anrechnen lassen, natürlich mach ich das. Und dann interessiert es mich vielleicht so sehr, das da schon mal diese Sensibilisierung da ist, dass ich die Richtung stärker weiter verfolgen kann. Nur muss ich damit einmal in Berührung kommen. Jedoch sind unsere Studierende auf der TU schon so ausgelastet, dass sie nicht diese Freizeit haben, dass sie alles weiterverfolgen können was sie interessiert.

4 Bezüglich der Abwicklung, ich finde die war sehr positiv. Vorallem mit dem Institut vom Martin E., und dessen Film team, die sind sehr innovativ und professionell und mit denen kann man sehr gut zusammenarbeiten. Das war äußerst positiv. Das hab ich persönlich immer gesagt. Also wenn das irgendwie weiterverfolgt wird, ich würde das auch als externer sofort weitermachen und meinen Input dazugeben.

5 Bezüglich der Umsetzung und wie es angekommen ist, aus organisatorischer Sicht, ist da sicher sehr viel Aufholbedarf, weil ich zb.: dann die ganzen Anmeldung im mooc (massive open online course) selber hatte, und dann waren kleinere, nicht kleinere und für die TU Graz noch größere Hürden gegeben wie. z.B.: wie migriere ich das ins TUGonline? bzw. für 150 Personen muss man ein Zeugnis auszustellen? Das sind Dinge wo ich denke, hinsichtlich der Vorarbeit die geleisetet wurde, sollte dass das kleinste Problem sein. In meinem ursprunglichen Konzept sollte es ja ein "flipped classroom" sein. Das bedeuted dass die Studierenden eben anders als man es von der Schule gewohnt ist, wo man berieselt wird und zuhause die Aufgabe macht, es hier umgekehrt ist und die Studierenden konsumieren den Inhalt zuhause und kommen dann zu mir, mit den ausgefüllten Canvas und wir machen dort einen Workshop. Also arbeiten an der Idee. Weill das was sich vervielfältigen kann, nämlich den Transport des Wissen, das kann ich im mooc unzählig vervielfachen. Das wär meines Erachtens das "Geschäftsmodel" für die TU Graz gewesen. Das ich sage dieser mooc ist für alle zugänglich, für jeden. Egal ob ich ein Frisörgeschäft eröffnen möchte oder Studierender bin. Aber unsere Studierenden kommen in den Genuss das sie unsere LVs besuchen können, wo ihre Gedanken überprüft werden können. Weil wenn ich etwas gehört habe heißt es nicht das ich etwas anwenden kann. Und das wären so die Ideen und Gedanken dahinter gewesen.

6 Wie profitieren die Studerienden vom Lehrkonzept "flipped classroom" ?

7 Die Studierenden kommen dann mit ihrer fertig ausgefüllten Idee zu mir, also es geht eigenlich in Richtung consulting im Bereich Entrepreneurship. Davon, glaube ich profitieren die Studierenden am meisten. Aber da gibt es viele Fragen von der TU Graz zu klären. Wie viele ECTS gibt es, gibt es Anwesenheitspflicht und wer überprüft ich die Anwesenheit. Das ist noch viel Arbeit zu leisten.

8 Wie beschreiben Sie die Zielgruppe der LV?

9 Meiner Meinung nach jede Art von Person die gründen möchte. Bewusst nicht nur die Studierenden, sondern ich wollte das wirklich für alle zugänglich machen, was ja von mooc der sinn ist. Zum Beispiel was ist dennn jetzt ein Businessplan. Ob nun jemand ein Frisörstudio eröffnen möchte oder ob das jemand der eine neue Turbine erfunden hat und noch Studierender ist. Es ist eigentlich egal. Die Inhalte sind dieselben. Ich habe es schon versucht auf die akademische Sicht zu lenken. Es ist jetzt doch eben eine LV und du kannst davon profitieren. Eine Privatperson hört sich das nur an. Als Studierender hat man die Möglichkeit ECTS zu bekommen und weitere LV in diesem Zusammenhang zu machen. Und als Studierender mit einem Konzept, kann dann auch zu mir kommen und das weiter ausarbeiten.

10 Wie sehr schließt der Name Teile der Zielgruppe aus bzw. spricht sie an. Da Startups im engeren Sinne ja durch hohen Innovationsgrad und Skalierbarkeit definiert sind und das nicht alle der Zielegruppen einschließt?

11 Es gibt mehere Definition für Startups aber gerade
12 der Innovationsgrad und Skalierbarkeit sind schon zwei Schlagwörter und darauf zielen wir auch ab. Aber gerade mit dieser Plattform, wo man sagt das ist für alle zugänglich, das war für mich etwas das für den startup und allegemeinen Gründungsgeist wiederspiegelt. In Wirklichkeit ist es für Gründer egal was du machst. Gründer sind Gründer. Gründer sind ähnlich vernetzt und haben ein ähnliches Denken. Natürlich ist es so das man sich auf Start ups auf universitärer Sicht konzentriert. Aber warum soll es nicht jeden zugänglich sein. Ich sehe auch keinen Grund warum man da unterscheiden soll. Das Ganze hat ja auch Start up Journey geheißen, weil es soll ja auch eine Reise sein soll. Wir haben da wirklich sehr viele Teile ausgearbeitet. Wir haben 4 Prozessschritte eingebaut. Von der Idee bis zur Gründung. Aus diesen 4 Prozessschritten, also da hab ich mir auch meinen eigenen Prozess überlegt, hab ich auch erarbeitet welche Themen in den einzelnen Schritten notwendig sind. Inhaltliche Themen, welche übergreifenden Themen und welche begleitenden Themen (Do's and Dont's, Pitching etc.) Eigentlich wäre es ein Endkonzept, dass man da eine Start Journey mit der Überschrift: Geschäftsmodel oder Finanzierung, etc. So dass man eine Reise hat. Wenn ich es mit wenigen Worten benennen will: Ich hab schon versucht das skalierbar zu machen.

13 Anhand dieser aufgezeichneten Student Customer Journey, wo (an welcher Stelle der Journey) profitieren die Studierenden am meisten von dieser LV.

14 Ich glaube schon das es den ganzen vorderen Bereich betrifft. Also von 0 bis zur Decision for Entrepreneurship. Aber man unterscheiden welche Zielgruppe man betrachtet. Wenn ich jetzt die Studierende nehme, dann wirklich von 0 weg. Weil dann denk ich mir, wenn ich ein Angebot schaffe, ich kann damit Interesse wecken. Eigentlich war mein Ziel auf der Universität, was ich immer gesagt habe, das Entrepreneurship bzw. die Gründungsgarage so bekannt wird wie ein IAESTE Auslandspraktikum. Das war mein Anspruch. Dementsprechend muss man da sehr früh beginnen. Wann entscheiden sie sich für ein IAESTE Auslandspraktikum? Sie haben das vielleicht schon mal irgendwann gehört. Vlt vor der Inskribtion oder bei den Welcome Days. Wenn sie so Feuer und Flamme sind gehen Sie schon in den ersten Semestern. Aber viele werden das sickern lassen sie werden immer mal wieder davon hören. Und denken sich irgendwann werd ich das einmal und machen das in einem höheren Semester. Und das war für mich der Anspruch, wir müssen eigentlich ab dem ersten Tag, ab den Welcome Days, Ich hab dann auch , versucht , zumindest bei den Maschinenbauern, die Gründungsgarage vorgestellt, das den Studierenden klar ist, das gibt es ein Angebot. Weil die Wirtschaftsingeneur Studiengänge haben ja noch eher einen Bezug zu Wirtschaftsinstituten, aber die anderen Studiengänge haben überhaupt keinen Touchpoint mit diesem Thema. Garnicht. Und auch auf den Wirtschaftsinstituten ist der sehr Tochpoint wenig, heißt es noch lange nicht wenn ich eine LV über Buchaltung mache das ich eher geneigt bin zu gründen. Dann kommt eher von einen TU Studierenden, für das wirtschaftliche haben wir eh einen BWLer. Es ist auch oft mit diesen abschätzigen Ton, weil man überhaupt nicht weiß, was der für eine Leistung bringt.
15 Dementsprechend sehr ich das von Beginn weg bis zur Decision point. Natürlich je näher ich dem DfE bin desto mehr macht es Sinn.

16 Nur wie wir alle wissen eine Idee wird nicht an einem Tag geboren. Ich mach keinen Businessmodel Canvas und am nächsten Tag gründe ich. Ich hab da ca. 37 Iterationen. Ich hab da mal ein einen BMC gemacht und dann schau ich mal ob ich eine Finanzierung bekomme und und dann fang ich mit den prototypen and anderen Dinge an. Dann kommen andere Meinungen. Dann eine Marktrecherche die das ergänzt. Dann ändern sich die Produkteigenschaften und komm ich drauf wie soll ich eigentlich Geld machen, überdenke meinen Revenue stream und überdenke was auch immer. Geh dann meine Felder durch und irgendwann bin dann soweit und jetzt könnte es funktionieren und gehe auf den Markt. Und meistens ist es dann die Gründung. Und auch da muss man unterscheiden, was das Alter betrifft und ob es Studierende sind. Studierende haben es insofern leicht, da sie das neben dem Studium machen. da sie in irgendeiner Form finanziert sind, wo sie "wenig" Geld brauchen. Das ist ein Klientiel das sagt ja ich studiere aber bevor ich noch eine LV mache oder noch einen Tag arbeiten gehe in der Woche, probier ichs selbst zu gründen. Also es ist leichter verkraftbar. Wenn ich aber 35 - 40 Jahre bin und mir ein Eigenheim aufbaue und auf Einkommen angewiesen bin wird es natürlcih schwieriger. Es gibt dann selten Arbeitgeber die sagen, wir reduzieren dann von 30 auf 20 Stunden. Dann muss man die Entscheidung treffen seinen eignen Job aufzugeben und das ist natürlich eine große Eintrittsbarierre.

17 Wie wichtig muss auch in den Köpfen manifestiert werden dass man während seiner Studienzeit nicht nur gründen kann bzw auch im Sinne von "Du kannst es schaffen, du hast auch Fähigkeiten dazu!" Und kommt das zum Ausdruck?

18 Beides. In diesem Sinne es muss erst einmal im Gehirn verankert sein. "Hey das ist eine Möglichkeit" Das ist eine Opportunity. Diese Awareness zu haben. Zum ersten. Und zum Zweiten: zum Beispiel, ich habe ja auch gelernt wir man für einen Marathon trainiert, ich fange jetzt mit Marathontraining an. Das sind für mich zwei Dinge die gleich wichtig sind. Wenn ich auf der einen Seite das Angebot erhöhe aber eigentlich interessiert es niemanden weil es nicht am Radar ist. Unternehmertum überhaupt nicht in Frage kommt. Sogar kritisch und mit Abstand betrachtet wird. Und das zweite ist die Werkzeuge zu lernen um das umsetzen zu können. Dazu muss ich sagen, dass trau ich allen voran den TU Graz Studierenden (wobei ich sie nicht hervorheben möchte) Aber ich denke doch ein Alleinstellungsmerkmal von einer Technischen Universität ist dass unsere Studierende lernen sich Dinge selbst beizubringen. Das ist ein wesentliches Merkmal. Und wenn ich einmal sage dass ich in die Richtung gehen möchte, das ich auch diese Eigeninitiative habe. Wie auch in anderen Zweigen und LVs und zusammensuchen von Wahlfächern, dann kann ich auch das Angebot auch wahrnehmen. Ich muss auch den Studierenden dazubringen das sie das Angebot auch annehmen und auch tun. Das liegt dann im eigenen Ermessen.

19 Wie kann man das "können" (im Sinne von: die Fähigkeiten zu haben es zu schaffen) steigern

20 Bei dieser LV ist es wenig der Fall. Es war schließlich reiner Wissentransfer. Deswegen war es ja auch angedacht mit diesen Workshop die Möglichkeit zu haben: Komm mit deinen Canvas und jetzt reden wir darüber. Das ist auch ein was ich bei der Gründungsgarage gemacht habe, also der mooc war auch dafür gedacht den vielfältig in anderen LVs einsetzen kann. Als Programmierer würde mann sagen: Objektorientiert Progammieren. Diese Objekte kann man immer wieder einsetzen. Ich erkläre genau so gut bei der Gründungsgarage was ein Canvas ist. Und eigentlich das war auch der Grund dafür, ich steh dort bei einem 2 Tages Workshop und geh mit jedem Einzelnen jedes Canvas durch und lass das untereinander bewerten. Und es vergeht minimum ein Tag damit zu erklären was ein Businessmodel Canvas ist. Und da denk ich das könnte man sich sparen, weil wertvoller ist die Diskussion darüber. Und da denk ich auch dass die Studierenden auch wissen sie können das. Es war generell in meiner Wahrnehmung in meiner Lehrverpflichtung so dass sie durchaus gefordert werden können und sollen. Dh. nicht nur drinnen sitzen und sich berieẞeln lassen und sondern vorallem wenns ums die eigene Geschäftsidee geht das auch zu probieren. Die sollen dazu animieren und etwas machen und praktisch an etwas arbeiten und auch Werkzeuge mitnehmen. Das ist aber generell in den technoökonomischen LVs schwieriger. Weil im Vergleich zu anderen LVs, dieses "Wirtschaft" mit irgendwelchen Zahlenkonstrukten "ich saug mir was aus die Finger" was irgendwie so das mindset der Studierenden oftmals ist. Und es ist oftmals schwierig. Wenn ich sie jetzt eine strategische Entscheidung für ein

Studierenden oftmals ist. Und es ist oftmals schwierig. Wenn ich sie jetzt eine strategische Entscheidung für ein Unternehmen treffen. Dann ist das in der Realität eine sehr hohe Tragweite. Dann muss in einem halben Jahr 10 Mitarbeiter entlassen. Oder mehr, in einen großen Unternehmen.

21 Wenn ich jetzt in einer LV sitze und hab da eine Case Study über eine strategische Entscheidung über Nintendo mit einer neuen Spielkonsole, dann meinen die meisten Studierenden das man da einfach irgendwas schreibt. Dann mein ich garnicht schlecht, das is einfach von der Vorstellungskraft und mit den Erfahrungen die sie noch nicht gemacht haben ist es oft schwierig und das kommt erst später. Dann kommt "ja stimmt" oder "wie war das nochmal mit dem Portfolio oder Businessmodel" Das kommt dann später aber während der Studienzeit ist es of schwierig damit arbeiten zu können. Um aber etwas positiv zu sagen, bei den Gründungen bei der Gründungsgarage hab ich das super gefunden das wenn die Leute eine eigene Idee haben, dann denken die Leute auch in der eigenen Idee mit! Und das ist das nicht nur so eine fikitive, ja wir investieren 100 Millionen Euro und bauen in 5 Tagen ein neues SAP system. Sondern da betriffts ja mich und da wird dann intensiv daran gearbeitet. Ich glaub dass man mit diesen tools sehr viel lernen kann und da feedback geben kann und viele Bedenken beseitigt, dann sagt warum mach ich das eigentlich nicht.

22 Das Hauptziel ist eben Wissenstransfer?

23 Ja, zuerst einmal Awareness schaffen, Wissenstransfer und praktische Anwendung, an der, womöglich, eigenen Idee. Die Startup Journey kann dann als VO und UE gegliedert werden. Der Vorlesungsteil dient zur Awarenessschaffung und der Übungsteil (im Lehrkonzept des flipped classroom) als Consulting Teil, zum praktischen Arbeiten.

24 Welche hopes, fears and needs werden in der Startup Journey adressiert?

25 Hope:
26 Die Möglichkeit das diffuse der Gründung greifbar wird.
27 Ich verstehe was ein BM ist und welche Relevanz es für die Gründung.
28 Ich kann das auch umsetzen und auf meine Idee anwenden.
29 Needs:
30 Ich lerne was ich brauche um ein BM zu erstellen.
31 Fears:
32 Schaffe ich das, ist das realistisch, traue ich mir das zu? Ich erleb das ja selber und das ist viel harte Arbeit und das ist auch Verzicht. Man hat die Möglichkeit an der eignen Idee zu arbeiten, etwas aufzubauen und kreativ zu sein. Aber das stehen auf Dinge gegebenüber. Ich bin nicht Abteilungsleiter bei der AVL und verdiene 70k. Ich bin mein eigener Angestellter und hab ein kleines Budget zu verwalten. Und daraus muss auch die Gehälter und mein Gehalt bezahlen. Es sind keine vordefinierten Aufgaben, sondern es ist sehr viel Eigeninitiative und Kreativität gefragt und es ist kein 9 - 5 Job. Und das spiegelt sich weider mit allem was die Gründung betrifft. Hab ich die Zeit dafür, will ich das, bin ich bereit auf etwas zu verzichten. Sei es Zeit mit der Familie, Zeit mit meinen Freunden für Studium. Die Entscheidung zu treffen mehr zu arbeiten und weniger zu verdienen. Bei der Gründungsgarage sind Teilnehmer dabei die nebenbei arbeiten um an ihrer Gründungsidee arbeiten können. Was sie gearbeitet haben wird sich hoffentlich zurückzahlen (aber natürlich geht nicht jedes Start up auf)

33 Was sind Gründe, damit sie sagen können die Start up Journey war erfolgreich?

34 Ich bin einmal sehr zufrieden. Da es für mich der erste Versuch war und ich bin auch eine sehr kritische Person und sehe sofort auch Potential für Optimierung. Aber man darf es auch nicht schmälern, weil das gibt es jetzt einen Kurs und man diesen universal einsetzen und immer wieder anschauen. Das sehe ich als Erfolg. Ich bin auch zufrieden damit, trotz viel Eigeninitiative und mit dem F&T Haus und die Bemühung. Und auch das Insitut von Martin Ebner das es dort viel Bemühung gegeben hat in Richtung innovatives Lernen. Ich hätte mir noch mehr Feedback von Studierenden gewünscht. Aber das hat auch sicher damit zu tun das mein Dienstverhältnis geendet hat. Weil das

Studierenden gewünscht. Aber das hat auch sicher damit zu tun das mein Dienstverhältnis geendet hat. Weil das wäre für mich wichtig gewesen dass man da zum Austausch kommt. Sei es eine Feedbackbogen oder ein persönliches Gruppengespräch. Schritt 1.

35 Schritt 2: Sukzessiver Ausbau dieser moocs. Mehrere Moocs, mehere Moocs. Flipped classroom moocs. Work spaces wo auch Studierende arbeiten können. Das man noch interaktiver und lebendiger macht. Da bin ich auch ein Fan von diesem Iterationsmodel. Warum sollte man überall auf der Welt anwenden und in der Lehre nicht. Feedback allgemein. Was kann man anders und besser machen. Wenn man es fertig hat, hat man das Gefühl man könnte es sofort besser machen. Also es hat sicher sehr viel Potential. Aber defacto bin ich sehr zufrieden das es online ist. Da würde ich mir wünschen dass da die Institute näher zusammenrücken. Zum Beispiel am Institut X, gibts die 3, am Institut Y gibts die 4.

36 An welcher Schraube müsste man drehen damit mehr Studierende an der TU Graz gründen?

37 Das gibts mehre Gründe:

38 1. Awareness Mangel. Ich weiß garnicht das ich gründen kann.

39 2. Fehlende Kenntnis über den Weg wie man selbstständig wird, es erscheint unbequem und außerdem traue ich mir das nicht zu.

40 3. Hemschwelle: Vorausleistung. Wenig Gehalt, viel Arbeit

41 4. Absoluter Bedarf am Markt. Die Märkte sind so leer gefegt dass jeder Techniker aufgenommen wird. Vorallem in den Branchen der IT. In den IT Studiengängen gibt es eine hohe Dropoutquote aufgrund der Nebenbeschäftigung die sie nachgehen. Warum soll ich eigentlich weiter studieren. Der Markt ist so leer. Ich (aus kriege pro Monat 3 Abwerbungsgespräche. Warum soll ich mich dann selbständig machen?

42 Und unsere Ingeneure, die sie sehr Technik verliebt sind möchten nichts mit Wirtschaft zu tun und schon gar nicht mit dem Kunden.

43 Und da wäre der Schlüssel die Koorperation mit der KFU um eben interdisziplinäre Teams zu haben.

44 Was können diese interdiszlipinäre Teams schaffen bzw. warum sind die wichtig? Und wann in der Student Customer Journey, auch schon vor der Idee bzw. vor der Gründung?

45 Ja. Natürlich auch schon vor der Gründung. Weil ich nicht ein Produkt entwickeln sollte und dann gleich gründe und dann erst mir Gedanken mache über die Stakeholder über den Kundenbedürfniss, Vertrieb und Finanzierung etc. Sondern ich überleg mir das vorher. Oder sich über den Stückpreis Gedanken zu machen. Das ist der Fehler den viele Techniker machen und basteln dann 4 Jahre an irgendetwas und es interessiert niemanden. Deshalb ist diese Interdisziplinärität notwendig. Vor der Gründung und der Idee

46 Wo glaubst du fallen die meisten Leute aus der entrepreneurial student journey raus. Bzw wo, in welcher Phase besitzen sie ein Key Bedürfnisse die (noch) nicht gut genug adressiert werden?

47 Ich glaube man muss da wirklich in Vorbildwirkung gehen. Also wenn ich an unsere Studierenden im konkreten denke und wenn da einer von der KNAPP, AVL oder McKinsey die Sterne vom Himmel holen. Man kann da wirklich positive und negative Beispiele herholen die dann inspirierend wirken. In der LV Unternehmensgründung (ich war auch zuständig für die LV) hab ich auch Podiumsdiskussion gemacht wo ich GründerInnnen eingeladen habe. Und vorallem auch Studierenden die gegründet haben. Also die waren den 1 bis 2 Schritte voraus. Die sind jetzt im Coworking space. und die gründen jetzt im nächsten Monat. Ich kann mich komplett damit indentifizeren. Der hat das gleiche studiert etc. Und das kommt total gut an.

48 Wie kann man diesen advanced peer kontakt steigern?

49 Wir machen da im Rahmen der Gründungsgarage eine Brunch, andere Veranstaltungen. Und das natürlich mit beiden Universitäten KFU und TU um die fächerübergreifendes Publikum.

B.2.B Interviews - direct audio coded interview

Interviews are recorded on audio files available on attached USB flash drive. The playlist is shown in the following table

Interview (organized by Interview category [e.g.: “P” [Participant]; + “touchpoint” = example: P. Product Innovation Project)	Duration
E. Product Innovation Project	00:56:30
E. Robocup (1)	00:33:23
E. Robocup (2)	00:50:47
O. Greentech Jam	00:41:28
O. Product Innovation Project	01:15:41
O. Science Park	00:43:07
O. Social Entrepreneurship lecture	01:33:57
O. Startup Spritzer	01:45:57
O. Startup Journey	01:00:09
O. Venturepreneurship Aula	01:30:25
O. Wirtschaftsgeist	00:55:15
P. Product Innovation Project (1)	01:09:13
P. Product Innovation Project (2)	00:55:15
P. Product Innovation Project (3)	00:43:58
P. Startup Forum Alpbach	01:17:17

Appendix C

This appendix includes the fill-in assistance for touchpoints designer generating a Touchpoint characterization chart (the chart's name prior to touch point contribution chart), explaining the experience design related concepts, based on the data collected from (see Appendix B).

Touchpoint characterization fill-in assistance

essential characteristics

characteristic	*Matched or related model or theory*		
Touchpoint level		Lit.	Super touchpoint: Represent the overall event, course etc., that is responsible for providing the touchpoint Sub touchpoint I: Sub event or session that is part of the super touchpoint (meeting, final presentation, etc.) Sub touchpoint II: Part of the Sub touchpoint I. E.g.: item on the agenda of the final presentation such as socializing, small talk, etc. …
Direction of initiative		Lit.	From which direction was the touchpoint provided Top down: Initiated by the university (e.g.: institute hosts a course, event etc. Bottom up: Initiated by the students (e.g.: engineering competition, recruiting fair, etc.)
Contextual atmosphere		Lit.	Formal: E.g.: Such as meetings Informal: E.g.: Socializing after working session Party setting:
Social Context		Lit.	The interaction can either take place within a group of people (group) or in a one-to-one scenario
Diversity of background		Lit.	The extent to which the backgrounds are matching or differ from each other. Background can be field of expertise (e.g.: Mechanical Engineering) but also be based on the culture (e.g.: nationalities). Uniform: Group of mechanical engineers discusses about a problem to solve. Diverse: In a social context of a one-to-one the individual in focus (point of view) is an engineering background and the second role in the interaction is a professor of psychology, discussing about the implementation of a current technology
Interaction Initiator		Lit.	Individual in focus: The interaction was initiated by the individual in focus (the person on the entrepreneurial journey) External role: By the other role in the interaction (e.g.: touchpoint provider, superior, role model, peer, etc.) External circumstance: None of them. By an external party that is not involved in the interaction but initiated it (i.e.: Organizer orders a grouping of participants to discuss about certain topics)
Relationship to roles	Falchikov 2001	Int.	Relationship between the individual in focus and the interacting role (e.g.: role model) based on the alignment of the goals (in our case entrepreneurial commitment) and

			the level of expertise (experience and knowledge and the progress on the entrepreneurial journey). Junior: different goal and lower level of expertise Junior peer: same goals and lower level of expertise Peer: same goals and same level of expertise Role model peer: same goals and similar level of expertise but further progressed in the journey Role model: same goals, higher level of expertise and further progressed in the journey) Superior: different goals, higher level of expertise, different journey.
Act of role modeling		Int.	Based on interviews' outcomes, it turned out the interaction with role models have a significant influence on the journey towards the entrepreneurial commitment. Therefore, this form of description is further decomposed and categorized by their actions they take. Presence: Role model is just present General Support: Directed to many more Individual Support: Directed to the individual in focus. Taylor made support. Ranges from small favor to a high degree of time and energy investment. Constructive: Points out specific mistakes or positive traits and helps with concrete proposals to move further in the journey Non-constructive: No specific and detailed critique mentioned in order to better understand either the positive or negative remarks

intentional characteristics

Character-istic	***Matched or related theory/model***	***origin***	***explanation***
Opportunity offered	(Robier 2014)	Int.	Advises to proceed on the continuation of entrepreneurial journey in case of the end of a e.g.: course or the receiving a rejection None: Receiving an email of rejection for application at a startup idea competition without any advice or opportunity offered, on where to proceed Opportunity or advice offered: Same situation as above but in the rejection, mail there includes the contact of a person who can help develop further the idea.
Degree of one-stop-shop		Int.	Describes which stages of journey is covered by this touchpoint. In case of the entire spectrum, we speak of a one-stop-shop. I.e.: Course offers a guidance from problem definition over idea till validation, but no support towards the entrepreneurial commitment. The stages' names represent the final state are explained below: Awareness: Students' needs located between no awareness of what entrepreneurship means towards reaching a rough understanding of it Vision: From the rough understanding of entrepreneurship towards reaching the commitment to a defined vision (e.g.: Causal coaching sessions, career counseling, 'what kind of impact in the world do I want to be part of?') Problem definition: From the defined vision, over the identification of the challenges on the way, till defining a core problem to work on (e.g.: Sessions on Design Thinking dealing with the three two phases (Understand and Observe and Point of view)

			Idea: Based of an identified problem over brainstorming of ideas towards deciding for the ideas that are about to get validated Validation: From the ideas decided upon reaching a solid validation on their potential Commitment: After reaching a good understanding completing the steps towards the commitment to entrepreneurship
Support to use the interconnected entrepreneurial ecosystem		Int.	How are the single touchpoints interconnected and depending on the needs, which ones are to interact with? What is the next step resp. what do I still need to figure out? I.e.: Need for idea generation.
Moment of Truths	(Kalbach 2016)	Lit.	Moments of Truth (MOTs) are critical, emotional charged interactions and usually occur when someone invested a high degree of energy in a desired outcome. Getting them right or failing at them, either make or break a relationship. In our context we can describe 4 MOTs. The Stimulus, the 'Zero Moment of Truth' (ZMOT) and the 'First moment of Truth' (FMOT) and the Second moment of Truth (SMOT). All can appear in a positive and negative version. Here are some examples: Stimulus: Student comes across an advertisement of entrepreneurship related course via a poster Positive FMOT: Customer arrived at the airport without his boarding pass. Without discussion, flight agent personally drove back to the hotel where he left it and delivered it to him at the airport. Negative FMOT: i) Students put in a lot of hard work. Even though it was sold this way, the course eventually did not live up to the main expectations and did not meet the core motivations of the students to attend: Their learning impact. ii) Promises from the course organizer (learning impact in a specific field), which accounted as one of the main drivers for students to attend, were reneged. Positive and negative ZMOT: Student considers attending a course or event and receives by a third party (friend, colleague, professor) a recommendation to do so (positive ZMOT) or discouragement resp. bad verbal propaganda (negative ZMOT) SMOT: the experience the customer has when using a product. E.g.: Experience after attending an entrepreneurship related course. What is for one person the second moment of can be for another their ZMOT. E.g.: Recommendation of the course by word of mouth or students reads testimonials.
Innovation Styles®	W. Miller 2008	Lit.	The model suggest that everyone approaches innovation and change in a different way, by one's own unique expression of four innovation styles. To stimulate innovative thinking and hence, optimize innovativeness from each person, each style asks different questions. -Visioning: What is our vision of the ideal future? Developing a clear sense of purpose. Examples: i) To reach equal salaries for both genders. ii) Autonomous driven cars -Modifying: How might we refine and optimize what has come before, step by step? By building on what has

			already been accomplished. Focus on short term success. Example: Increasing the fuel efficiency of an engine based on the known and used methodology and process. -Exploring: What can we create that is radically new and discover novel possibilities? Leap before you look. Not knowing the current process in depth. Example: Transferring and applying knowledge and ways of working of e.g.: investment banking into a complete other field e.g.: social entrepreneurship. -Experimenting: to combine and test different factors. What can we combine to create a new solution? A trustworthy process exists and now one can troubleshoot. Example: Thomas Edison and his experimentation with a countless amount of materials for his electric light bulb.
Addressing known and latent needs		Int.	Known needs: Addressing the drivers/needs of a student for attending the course. Latent needs. Student is not (not) aware of his needs and not how to meet them to proceed in the journey
4MAT	McCarthy 1990	Lit.	The model suggests everyone has a preference on how to learn. These can be categorized into 4 styles. Learners use their most comfortable style while being challenged to function in less comfortable ones. Why: Why is that information useful to me? How does it address my needs and motivations? What: Theoretical input on model, tools or stories about anyone and anything. Explanation of the topic itself. How: I must see it being applied. It is often based on an exercise. Either done by the student's themselves or demonstrated. What if: Can be to best describe our context divided by 'reflection' and 'on the spot. Reflection: Realization of learning and one self's skills and how this help to continue the entrepreneurial journey On the spot: I must see it successfully working and performing and adding value to my life or to others. E.g. Either successfully applying a just newly learned i.e. method, skills knowledge or one that is
Style of instruction		Lit	To what extend are the students encouraged to iteration? Which style of instruction is applied to foster learning process? Flipped classroom: The model suggests the students consume the content online and put it in practice at home. Then they come to the classroom for exchange of experiences, clarification and engaging in each other's concepts under the guidance of a mentor. (Abeysekera, Lakmal, Dawson 2015): Occasional consulting: Expert only occasionally, after student's demand supports process. Push and pull: Example: The event alternates by serious and focused session on business model generation for and long breaks to interacts with others participant in an informal manner.
Inducing change of thinking and approach		Lit.	Based on the student's academic background, some are trained problem-based thinking (i.e.: humanities) and some a solution-based thinking (i.e. ICT background). In engineering disciplines, the "fuzzy front end" trait is not fostered and applied. Diverse: Students are exposed to a diverse group of thinking. Homogenous: Team only consists of students that prefer to approach a problem in one specific way.

Intention to and guidance on emotional journey	Int.	Tools and knowledge communicated to the student when it comes to emotional charged interaction (conflicts, disappointment, no motivation etc.). The spectrum is based on the time the instruction is offered. Prevention: In case it happens in the future, the course organizers prepares them through conversation on how to tackle it. On the spot: High disappointment towards the company. Consultant helps on how to perceive the situation, how to cope with and learn from it. Debriefing: After the issue was resolved. The organizer hosts a debriefing session on what to learn and place it properly and correctly
Appreciation and Thankfulness	Int.	The interaction describes in what way appreciation and/or Thankfulness is expressed. Monetary means: Money or vouchers Offer to buy and adopt the concept: i.e.: how is the grading: grades in a certificate Company and spending time: feedback providing party spend time and wants to get to know them Fact driven addresses rational measurable achievements Person focused: addresses personal traits and skills
Degree of ambiguity	Int.	To what share does the student receive ambiguous feedback (both positive and negative are being well-reasoned) Rather evenly balanced: Both negative and positive feedback make up i.e.: Student receives argument why the business model will fail and why it will succeed. These sorts of arguments are evenly balanced
Content driver	Int.	Fact driven: One can receive a fact driven support by feedback on the work itself, taught a method resp. tool or advised on how to proceed. Person driven receiving a personal encouragement resp. feedback on personal traits
Versatile Applications	Int.	Teaching tools and knowledge to be applied in other domains and contexts as well. Everyday life: the tools of i.e.: design thinking is in a way taught that it can be applied in everyday life scenarios Intrapreneurship: Taught tools are applicable for different roles and responsibilities in the job life. Being in the position to act as an intrapreneur. Other domains: Taught tools and knowledge are not only limited to be applied to one specific field of expertise.
Degree independent decision making	Int.	Students decide which challenge they are going to work on as well which ideas get executed in real life. This can influence how much they identify themselves with the challenge and work per se. Further to which extend has the interaction involved party the power in the decision-making process and to what extend is it agreed upon.
Degree of influence on my immediate surrounding and the future	Int.	Task Influence on the immediate surroundings, my own living/i.e. in the city, creating/influencing the future Direct: How does the challenge, I chose in framework of a project, affect my immediate life. Working on an innovation project for the local energy company can affect one's life Indirect: Would describe the outcome of a challenge that has no affect to my everyday life (i.e.: improving the lifetime of a car's gear level)
Degree of real life of challenge	Int.	To what extend is the challenge I am working on, based on real life scenarios?

Competitiveness of setting	Int.	Real life: Working on your own idea which solves real life problem Fictional case: MBA course that is based on fictional case studies Fun challenge: Building a model around “horse pants” Just to learn the tools of it Analogies between team and working environment developed in startups to i.e.: student organization or at course project works. The members solve problems together and pursue a common goal. Walk through success and handle setbacks. The spectrum also includes the factor of competition within the team or towards the outside. Example: International Robocop competitions. A team from Graz competes with other teams around worldwide
Accessibility of manpower and its importance	Int.	Interaction among an interdisciplinary team in framework of a competition demonstrates the accessibility to form a team. Example: After a successful competition, some interdisciplinary team member decides to team up to further pursue the execution of the idea. Example: Among the team of the game jam winners there are designers, developers, marketers, and domain expert such as biochemistry. The mix of disciplines combined with the first teamwork experiences, sets the basis for a successful continuation on the entrepreneurial journey.

Goals of touchpoints

Goal	***Origin***	***Explanation***
Degree of product-market fit	Int.	Project outcome resulted into an appropriate product-market fit that stakeholder offers investment, adoption, or purchase
Changing perspectives opinions as well as falsify assumptions	Int.	Discovery that entrepreneurial activities addresses my known or latent talents and skills as well as my interest.
	Int.	Turning a firstly negatively perceived behavior an entrepreneur performs into a positive one and one’s own ability to perform i.e. networking). Examples: The rector and potential investor approaches project team and talks about i.e. funding possibilities and invitation to present the outcome, etc.
	Int.	One’s background turned out to be very useful for entrepreneurial activities. Example: student of humanities (e.g.: musicology) contributes with his expertise to help solving a problem for a startup
	Int.	The Interaction consists of a strong assumption brought in by the student in two ways. Eventually, either the students become enlightened or the interacting role becomes enlightened. The impact changed the way of thinking. Example: At a course, the company defines a challenge for students to solve. After dealing more depth with the problem the students found the underlying problem confirmed by the company. The students’ assumption was proven wrong.
Addressing latent needs and skills	Int.	Student is/was not aware of his needs and how to meet them in order to proceed in the journey “I wasn’t aware this is so much fun and that I am so good at it”
Addressing students’ main driver	Int.	The student’s main driver (which can change over time) is something to be figured out by the touchpoint designing party. Example: Student applies for a certain course due to his drive i.e.: to learn more on how to innovate. To what extend are course organizer aware of which students they attract and drivers they address and how well they execute on it.
Building friendships	Int.	Friendships among teams set base for a potential entrepreneurial activity after the end of a project

Team spirit and startup alike working environment	Int.	Team spirit contributes to the motivation, performance and increase the drive of the members to work toward common goal. A startup alike working environment.
Experience of frequent ups and downs	Int.	Experiences of up and downs will stick in their mind long term. Example: During a two-semester project charged with international and interdisciplinary team members facing periods of low and high motivation
Conflict involvement	Int.	Being involved in a conflict challenges student's soft skill.
Self-awareness	Int.	Putting students into situations where they push, they limit occasionally, they learn about themselves and about others.
Understanding the accessibility to facilitating resources	Int.	Understanding the accessibility to i.e.: assemble a team for a potential start up with an idea the team is thrilled to work on: The idea also can be generated by i.e.: game jams, in where two domains (i.e.: law and software development) "fertilize" each other Another example: To increase the perceived reachability for the contact of entrepreneurship related institutions, mentors, and other stakeholders by open, friendly, and welcoming personal interaction at i.e. events or on the website
Knowledge and skill are sufficient to become entrepreneurial active	Int.	Realization that the founder does not need to acquire knowledge and develop skills in every area relevant to the commitment to entrepreneurship. This can be distributed among the cofounder and teammates.
Clear picture about support in ecosystem	Int.	When someone got stuck on the entrepreneurial journey, how clear are steps to get moving again? Another example the degree of information load students is exposed to. The necessary information on the right time.
Confidence in early and cheap testing	Int.	Execution and communication of ideas are different, and some have by nature a difficult approach to be proofed and communicated. That does not mean the idea less of worth. They just differ degree of the provability. Further to realize how much resources and money one need to execute on the idea.
Personal development	Int.	Realization of oneself or by the conversation with entrepreneurs in the way they i.e. treat and empower their fellow humans, coping with difficult situations etc.
Diversity of the daily work and freedom to choose	Int.	Awareness of what the advantages such as diversity of the daily work and the freedom to choose what, when and how to work on it. Awareness of how self-controlled the life as an entrepreneur can be

Key variables of Decomposed Theory of planned behavior (DTPB)

Key variable	***Explanation***
Perceived behavioral control	According to Ajzen (1985, 1991), the perceived behavioral control reflects someone's belief regarding the access to the resources and opportunities needed to effect a behavior. It comes in two components: Self-efficacy and facilitating resources. To sum it up, how likely to I perceive I can execute the behavior (becoming entrepreneurial active) with the skills I have and the resources available
Self-efficacy	General Definition: One's belief in one's ability to succeed in specific situations or accomplish a task Bandura 1970). Adapted to our context: To what extend do I believe I can master the challenges that come along when becoming entrepreneurial active?
Facilitating resources	According to Triandis (1979) it represents the availability of resources needed to perform a behavior).

	Adapted to our context: This includes access to time, money, equipment, infrastructure, mentorship etc.
Attitude towards behavior	A better understanding of the relationships between the belief structures and antecedents of intention requires the decomposition of attitudinal beliefs, said Taylor and Todd (1995) Shimp and Kavas (1984) argued that the cognitive components of belief could not be organized into a single conceptual or cognitive unit. Taylor and Todd (1995) also specified that, based on the diffusion of innovation theory, the attitudinal belief has three salient characteristics of an innovation that influence adoption are relative advantage, complexity and compatibility (Rogers, 1983).
Perceived relative advantage	According to Shih and Fang (2004), refers to the degree to which an innovation provides benefits which supersede those of its precursor and may incorporate factors such as economic benefits, image, enhancement, convenience, and satisfaction Adapted to our context: In case of becoming entrepreneurial active, to which degree the student believes advantages come along in terms of economic benefits, image, fulfillment, development of skills etc.
Complexity	Complexity represents the degree to which an innovation is perceived to be difficult to understand, learn or operate (Rogers, 1983) Adapted to our context: The degree to which to become entrepreneurial active is perceived to be a complex endeavor
Compatibility	Compatibility is the degree to which the innovation fits with the potential adopter's existing values, previous experience and current needs (Rogers, 1983). Adapted to our context: To what extend do the jobs that come a long with the entrepreneurial activity meet their general needs and values.
Subjective norm	Subjective norm are social pressures, which arise from their individual's perceptions of what others will think about them performing the behavior in question (Vallerand, Deshaies, Cuerrier, Pelletier, & Mongeau, 1991). The subjective norm can consist of several so-called normative beliefs, which is stems from significant others. In this context we decided to address the role such has junior, peer, superior and role model.
junior	The degree to which others, perceived as a junior in terms of the relationship to roles, influence the behavior in question of one individual. Adapted to our context: The degree of perceived social pressure an individual with less entrepreneurial experience and motivation influences one's intention to become entrepreneurial active
Peer	The degree to which others, perceived as a peer in terms of the relationship to roles, influence the behavior in question of one individual. Adapted to our context: The degree of perceived social pressure an individual with the same entrepreneurial experience and motivation influences one's intention to become entrepreneurial active
Superior or role model	The degree to which others, perceived as a superior or peer in terms of the relationship to roles, influence the behavior in question of one individual. Adapted to our context: The degree of perceived social pressure an individual with more entrepreneurial experience and skills influencing one's intention to become entrepreneurial active