

Exploring the emergence of venture opportunity artifact

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Abstract

Entrepreneurial opportunity is the key construct of the entrepreneurial process. The recent debate on the opportunity wars shows that the construct lacks consensual clarity – scholars divided their opinion on the role of external environments and the role of entrepreneurs. By adopting design entrepreneurship, this study aims to understand how nascent entrepreneurs refine and shape their venture ideas into opportunity artifacts in the context of an early-phase organisation support system (known as a pre-incubator). A qualitative case study was conducted on a UK university pre-incubator that supported 13 venture ideas through its business start-up programme. The finding reveals nascent entrepreneurs, with the support of pre-incubator managers, applied a distinct design process that portrays the transformation of venture ideas from abstract artifacts to material artifacts to narrative artifacts.

1.0 Introduction

Entrepreneurship scholars are invigorated by the concept of venture opportunities. Before the creation of the venture, it remains a riddle (Ramoglou and McMullen, 2022). After the emergence of the venture, it becomes a visible social infrastructure (Dimov, 2016). The ontological nature of opportunities divided scholars into the realm of the external environment and entrepreneur. Proponents of the external environment emphasise its role (Davidsson, 2015: 2021, Davidsson et al. 2020; Ramoglou, & Gartner, 2022) whereas others highlight the role of the entrepreneur as a critical agent (Berglund & Dimov, 2023; Berglund et al., 2020). In both cases, to understand opportunities, it is critical to understand the actions of an entrepreneur. This understanding may increase the theoretical and practical usefulness of entrepreneurial opportunities. In the spectrum of venture opportunity emergence, the entrepreneurial journey begins from the formation of an idea through the development of a venture concept (intermediate articulation of potential value creation) to the creation and growth of a new venture (Dimov, 2007b; 2011; 2021; Vogel, 2017; Wood & McKinley, 2010; Wood, 2017). This study adopts the artifact-centre design perspective to explore how nascent entrepreneurs, with the support of a pre-incubator, shape and refine their venture ideas into opportunity artifacts.

1.1 What are opportunities?

Opportunity is a term that is generally understood as an umbrella concept – a phenomenon that incorporates a plethora of meanings (Wood & McKinley, 2020). It is defined as a venture idea (Davidsson, 2015), an artifact (Dimov, 2016; Berglund et al., 2020) or a blueprint for actions (Dimov, 2011; Dimov, 2021) emerging from a stream of continuously developed and modified ideas of products, or services (Dimov, 2007a; Gaglio & Dimov, 2018; Vogel, 2017) that can be introduced profitably (Casson, 1982; Shane & Venkataraman, 2000) under multitudes of felicitous environmental conditions (Ramoglou & McMullen, 2022; Davidsson, 2021). The concept of opportunity represents an entrepreneur's vision of the future world-state and the world-state that favours entrepreneurs' vision (Dimov, 2021). Therefore, the opportunity is an outcome of an individual's vision and actions (propositional content), motive (psychological mode), and external condition (Wood, 2017). The culmination process ascribes a prospective nature of opportunity that can lead to intended outcomes, such as idea generation, venture concept refinement, pivoting to new ideas, venture creation and further development, or undesirable outcomes, such as idea abandonment or failure.

Studying opportunities in the prospective nature sheds light on the nascent entrepreneurs who are in the process of starting their ventures (Carter et al., 1996). Nascent entrepreneurs are also known as emergent entrepreneurs or idea carriers whose identity transitions to fully-fledged

entrepreneurs depend on the emergence of new ventures (Dimov, 2010). There is an ongoing debate about whether opportunities are discovered (Shane and Venkataraman, 2000), created (Alvarez and Barney, 2007) and designed (Berglund et al., 2020). Opportunity as a designed artifact extends the dual nexus of entrepreneurs and the environment (Berglund and Dimov, 2023). This study views opportunity as the outcome of deliberate design. By adopting a design perspective, this study focuses on how venture ideas are purposefully refined and shaped into opportunity artifacts.

1.2 Design entrepreneurship

Design entrepreneurship has been gaining relevance because of its applied nature that extends the problematic dual nexus of entrepreneurs and environment to artifacts (Berglund, 2021). Proponents of design entrepreneurship scholars have argued that artifact-centred design entrepreneurship places entrepreneurs at the heart of the entrepreneurial process (Berglund et al. 2020; Dimov, 2016; Selden & Fletcher, 2015). Here, an entrepreneur is an active agent who purposefully designs their venture idea based on the available yet incomplete information. Artifact-centred design entrepreneurs shed light on the entrepreneurs on what they do in the face of uncertainties. An artifact is an expressed or tangible interface between the goal of entrepreneurs and the external world (Berglund et al. 2020). Both express and tangible interfaces suggest that the artifact is an entity that embodies both entrepreneurs' mental constructs and the physical world. In this light, venture opportunity is considered an artifact because it connects the goal of entrepreneurs with the external world. Berglund and Glaser (2021) have defined three types of artifacts: abstract, material, and narrative. The abstract artifact refers to the incomplete mental representation of a business model or fuzzy front image of insight (Vogel, 2017). Material artifacts are those that represent concrete manifestations of ideas in physical or digital forms. Narrative artifacts are sense-making devices that relate individuals, objects, or events to meaningful accounts. through which entrepreneurs connect them to their target audience. This study aims to explore how these three different types of artifacts emerge during the process of nascent entrepreneurs' venture idea refinement.

1.2.1 Duality of Actions that transform ideas into concepts

Opportunities are about what entrepreneurs do. This is reflected in the duality of actions: a) trying to create an envisioned world-state and b) adapting a vision that external conditions favour (Dimov, 2021; Sergeeva et al., 2021). The former action resonates with nascent entrepreneurs' journeys, in which they act in the present to deal with an unknown future. The later action resonates with past journeys in which external enablers (Davidsson, 2015), felicitous environment (Ramoglou & Gartner, 2022; Ramoglou & McMullen, 2022), or condition of satisfaction (Dimov, 2021) enable the success of venture ideas, i.e., the creation of the new venture. Such journeys are non-heroic because they omit failure. The duality of actions represents a two-way opportunity emergence: one is anchored on the individual's vision of the world-state (trying phase), and the other is anchored on favourable conditions that enable the vision to become a reality (achievement phase) (Dimov, 2021). Nascent entrepreneurs' trying phase involves their actions, such as searching for information, discussing with others, developing products or services and so on (Dimov, 2007b). These actions are driven by intermediate milestones (i.e., testing or validating ideas) that entrepreneurs intend to achieve. Early-phase organisation support systems or pre-incubators exist to support nascent entrepreneurs' actions.

1.3 Early phase organisation support system

Pre-incubation is the initial stage of business incubation where with the help of an incubator potential entrepreneurs develop embryonic businesses by testing, developing and nurturing business ideas, and this support continues until the business model is developed and the business plan is prepared (Bergek and Norman, 2008; European Commission, 2002; Hannon, 2004; Jansen et al. 2015; Nair et al. 2022; Wirsing et al., 2002). European Commission's (2010) benchmarking report identified pre-incubation as a key area of business incubation as this area provides entrepreneurial training and supports the creation of new ventures. The entrepreneurial training includes opportunities recognition, business model formation and the preparation of a business plan. This training is important prior to admission to the incubator.

Bergek and Norman (2008) studied 16 Swedish incubators and they found that incubators with a pre-incubation process focus on particular selection strategies for entrepreneur selection, which is based on the survival of the fittest approach where ideas and their qualification process are in focus. According to Wirsing et al. (2002), the innovative feature of a pre-incubator is a specific management, legal and insurance structure that allows potential entrepreneurs to test the feasibility of their business ideas before they take the risk of setting up a company. The legal entity of the pre-incubator forms an umbrella under which potential entrepreneurs are guided and controlled by the management staff, and can test their products on the market, thus gaining valuable business experience. This experience, in addition to continuous training and coaching, is expected to increase the sustainability of the future company.

Therefore, pre-incubation can be defined as the mechanism of transforming business ideas into new ventures and the outcome of pre-incubation is the formation of new start-ups or re-starting with new ideas if the initial idea is not viable (European Commission, 2010). Pre-incubator uses lean start-up methodologies to organise their business start-up programme activities.

2.0 Methodology

This study adopted an exploratory qualitative research methodology to investigate how pre-incubator supported nascent entrepreneurs refine and shape their venture ideas into opportunity artifacts. Qualitative research is essential for uncovering new insights into under-studied phenomena (Bluhm et al., 2011). Due to the paucity of research, very little is known about how venture ideas come into being as opportunity artifacts. Exploratory research methods are suitable for studying such an underdeveloped phenomenon (Seckler et al., 2021).

2.1 Case study research design

This study employed a case study research design to support the qualitative research. The main rationale is that it offers an in-depth understanding of a phenomenon within its natural setting (Yin, 2014). The phenomenon of the study is nascent entrepreneurs' action in shaping and refining ideas into opportunity artifacts. The following elucidates the case boundary.

Bounding the case. The natural setting of my case study was bounded by place, actors, events, and time. The boundary of the case is important because individuals' actions and interactions in relation to idea refinement occur within it. I selected the pre-incubator as the place of my study because the process of idea refinement occurs within it. Within the pre-incubator, I selected its business start-up programme through which participants and their ideas were assessed and supported. The programme aims to help participants discover the existence of opportunities through testing and validating ideas. Hence, the programme became a critical boundary of my case. Since the programmes take place annually, their timings became another significant boundary of my study.

Selection of participants. To select participants for this study, I adopted purposive sampling – an approach that involves an intentional selection of participants that can provide insight into

the study phenomenon (Teddlie & Yu, 2007). I selected participants who applied for and participated in the pre-incubator's business start-up programme. They were university graduates, and their age range was 23 to 33. Getting access to contemporaneous data is a key methodological challenge acknowledged by several scholars (Grégoire et al., 2009; Dimov, 2011). The selection of business start-ups provided unique access to rich contemporaneous data that could not be obtained by other means. The start-up programme annually supports 10 to 15 business ideas – an observable trend across all UK university pre-incubators. Sampling participants through the start-up programme ensured the theoretical transferability of the study findings to similar contexts (i.e., other pre-incubators).

2.3 Data collection

Opportunity is a socially constructed contingent phenomenon (Dimov, 2016). The study of socially constructed phenomena is very complex. It requires a face-to-face 'We-relations' approach which depends on direct exchange and interaction with participants (Berger & Luckmann, 1966; Burrell & Morgan, 1979). Consonant with social scientists, entrepreneurship scholars have shifted their focus on studying entrepreneurs from their vantage point – a 'We voice' approach, second-person perspective, and insider perspective (Berglund, 2015; Dimov, 2016; Dimov & Pistrui, 2022; Dimov et al., 2021; Ramoglou et al., 2020). Considering such an epistemic requirement, I adopted interview and participant observation as my primary data collection method.

Semi-structured interview. I adopted semi-structured interviews as one of my data collection methods because this method allows face-to-face interaction while keeping the conversation in line with the research question (Mason, 2002). I interviewed 13 lead participants who participated in the business start-up programme with 13 ideas. Furthermore, I interviewed pre-incubator managers to get an overall understanding of the programme and its supported participants. All interviews were conducted within pre-incubator premises during the first two weeks of the start-up programme. Both the physical setting (i.e., pre-incubator premise) and the timing of the interview were critical for reconstructing participants' initial accounts of opportunity emergence without losing their originalities.

Participant observation. I adopted a participant observation method to understand the actions of participants in refining and shaping their ideas. This data collection method allowed me to engage with participants in a social relationship by participating in their activities. To understand the meaning of someone's behavioural action, one must be guided by the knowledge of that person, and that knowledge is only accessible through participation in the activity with that individual (Schutz, 1972). I conducted a total of 79 hours of participant observation relating to 53 ideas, of which 13 ideas were supported through the business start-up programme. During observation, I interacted with managers, participants, and mentors and observed their interaction and their activities related to idea refinement. My observed activities include participant selection interviews, opportunity discovery training sessions, developing pitches, weekly market report presentations, customer discovery activities, product testing and validation, branding and marketing strategies, financial planning, and networking. These observed activities provided rich contemporaneous data.

2.4 Data analysis: Thematic analysis

I adopted an inductive thematic data analysis method for analysing data. The thematic analysis focuses on the meaning interpretation of a phenomenon by identifying, reporting, and analysing themes or patterns in qualitative data (Braun & Clarke, 2006; Boyatzis, 1998). I particularly selected an inductive approach because of its focus on meaning interpretation from the frame

of participants. My inductive nature of thematic analysis involved an iterative process of transcribing, coding, categorising data, and identifying themes.

I began coding by reading through transcripts line-by-line and breaking down the texts into meaningful segments. Line-by-line coding is useful for inductive theory generation because this strategy helps conceptualise data while avoiding pre-existing conceptual leaps (Charmaz, 2006). I conducted line-by-line coding with the research question and the unit of analysis (i.e., individual participant) in mind. The codable moment was captured when a basic segment of raw data represented a meaningful insight about the participants (unit of analysis) regarding the idea refinement (phenomenon). To facilitate a systematic approach, I coded each participant's data set one after the other. This allowed comparisons between participants. By comparing coding between data sets, I explored the conceptual meaning of data. When assessing the conceptual meaning, I considered participants' verbal and non-verbal expressions and the contexts (events, locations, and time) in which they occurred. Once I comprehended the conceptual meaning of a data segment, a code or conceptual name was given according to its representative meaning. These codes are the basic themes (Table 1). I ensured coding reliability by recording coding decisions and periodically reviewing the codebook.

While developing codes, I categorised them according to their representative concepts. The process of categorisation began by clustering similar conceptual codes in circles. These conceptual codes jointly represented one broad analytical concept that became the initial category. Similar to codes, the initial categories were given names according to their representative meaning. These categories are the organising themes. Following category development, I explored conceptual connections among them. The conceptual connections among categories emerged as the main theme. At the beginning of the theme development phase, I examined underlying ideas, assumptions, and nuances of participants' accounts and their behaviour. Themes emerged when categories individually and/or jointly captured something significant about participants regarding the phenomenon (i.e., opportunity). Also, some of the themes emerged from the sequence of events and actions that occurred during the process of idea refinement. In my analysis, themes became discernible when they were consistent, widespread, unusual, and emerged from multiple sources of data.

Main theme	Organising theme	Basic theme	First-order coding
Assessment	Assessment on participants	Participants' expectation	- To learn about business and management skills - To find something relevant to business - To gain guidance from the launch pad programme - To launch a business
		Evidence of market research	- Contacting retail shops about products - Showing current products' limitations
		Approach to target customers	- Trying to tell what customers should be doing rather than listening to them
		Product knowledge	- How is the training course different from others?

			- How many hours did it take to produce the content? - How long is the shelf life? - Balancing natural sugar content for diabetic patients
	Assessment on ideas	Resource	- Role of developers and cost of developing technology
		Target customers	- Dental school is my target customers - Schools and parents are my customers - Wealth managers are my target customers - Young and old people will download my app - Training young people as hairdressers
		Financial attractiveness	- How much is the juice price? - How much does dental school charge? - How much is subscription fees? - How much for media content?
		Sample products	- Bringing sample juice - Showcasing cupcakes - Visual prototype - Photographs of hairdresser training
Transformation of venture ideas into opportunity artifacts	Defining target customers		- Defining early adopters - Segmenting customers in buyers and users groups - Profiling target customers
	Material prototypes	Digital Landing pages	- Landing page of sports betting software - Landing page of baobab smoothies - Landing page of visual dental courses. - Landing page of queuing app - Landing page of music event arranging app - Landing pages of American pies, sweets, and desserts - Landing page of the cycling market place -Landing page of alternative therapy treatment -Landing page of virtual reality game of charity donation

		Physical product prototypes	- Pies, sweets and desserts - Baobab smoothies - face scrub cosmetics
	Complementary information	Market insights	- Creating new customer segments - Identifying product-related knowledge: new features, shelf-life, lower production costs, and substitute products. - Identifying new revenue streams. - Confirming market/customer problems
	Narratives	Pitches	- Narrative of betting software - Narrative of music arrangement app - Narrative of political events organising app - Narrative of virtual reality as a donation app - Narrative of African Baobab smoothie - Narrative of a cycling marketplace platform - Narrative of alternative therapy booking app - Narrative of vegan cosmetics
	Building domain-specific knowledge through examples	Analogues	- Drop Box's explanatory videos as MVP - Google example to example how start-ups behave - Kickstarter for pre-sales - London Met's launch pad programme - Mail Chimp and Webdam examples as ideal landing pages - Owlet examples to explain risk - Examples of previous launchpad participants
		Task-designed activities	- Overnight challenge as a way of engaging with strangers - Marshmallow challenge to develop products based on the knowledge of customers.

Table 1 From Basic Themes to Organising themes to Main themes

3. The case study of a UK university's pre-incubator

Accelerator is the business incubator of London Metropolitan University. Founded in 2005, the incubator supports digital technology start-ups through its physical infrastructures (i.e., subsidised flexible office spaces and shared resources), business support services (i.e., mentoring, marketing, recruiting, legal advice, patent support, and so on), and network provisions (i.e., connecting with the ecology of start-ups). In 2009, the incubator expanded its support to graduates and students for the creation of new ventures under the 'Student Enterprise' brand. This new form of organisation is called a pre-incubator (Wirsing et al., 2002; Jansen et al., 2015), idea hatcher (Bergek & Norman, 2008), or early phase venture creation support system (Nair et al., 2022). The pre-incubator is managed by a director, a student enterprise manager, and a creative enterprise manager.

For the pre-incubator's business start-up programme, incubator managers selected 13 ideas from 73 applications for their business start-up programme. The programme aims to help participants discover opportunities through experimentation involving testing and validating ideas. Using lean start-up methodology (Ries, 2011) as an opportunity discovery practice, the programme was organised into three primary activities. First, participants turned their ideas into testable assumptions by mapping them onto a business model canvas (i.e., value propositions, customer segments, and revenue streams). Second, they tested and validated those assumptions with potential customers through interviews, surveys, sales, and digital advertising. Every fortnight, they discussed with a panel of evaluators how they tested their assumptions, their findings, and the further courses of action. Finally, on the programme's final day, participants pitched their ideas as viable opportunities to the panel, who accepted six ideas and granted them free incubation support services for new venture creation.

The unsuccessful participants continued to pursue their ideas without the pre-incubator. They all achieved one or more of the following milestones: legal registration of business, raised investments, or first sale of products or services. Regardless of the start-up programme outcome (which was to show the existence of opportunities), no one abandoned their venture ideas. Their decision to continue shows their confidence in their ideas – opportunity confidence (Dimov, 2011). Thus, the emergence of venture opportunity becomes the definitive outcome of the programme.

This case study investigated how participants refined and shaped their ideas within the pre-incubator. The study gives rise to two main themes explaining the process of venture opportunity emergence: 1) the incubator's assessment of participants and their ideas and 2) the transformation of opportunity artifacts. The following sections present the study findings in detail.

3.1 Assessing participants and their ideas

My findings reveal that incubator managers explored both participants and their ideas as part of the business start-up programme's selection. These findings are presented in the following sections.

3.1.1 Assessment on participants

As part of the selection, incubator managers assess **participants' expectations, evidence of their market research, their approach to target customers**, and their knowledge about products. Through assessing these aspects, managers wanted to find out the quality participants suited to their start-up programme.

Assessing the gap in expectation

During the selection interview, incubator managers explored what participants expect from their business start-up programme. The participants' response pattern reveals they sought the incubator's support to develop their ideas into ventures. The following observation excerpt shows such expectations:

The panel: What are your expectations from the launch pad?

Participant: I do not have business experience and knowledge, but I know a bit about design. From the launch pad, I want to establish my business.

This theme surfaced during my interviews with participants. Below I present one of the participant's (B) interview excerpts to support this:

I think the incubator will be more like a networking help for me, just to see how other entrepreneurs are thinking and then compare myself to them. So I am gonna use them as a benchmark this is one thing I am gonna take as an advantage from the incubator. The second thing is that I am gonna get like professional business advice from our personal advisers. So they gonna help us to validate our idea and they gonna.. they have a critical way of thinking so they gonna help us to test our idea which is going to give us a more realistic view on how much our...on our idea like how good our idea is. And during the period, I really hope that I am gonna meet more mentors like the one we are already having at sights. So they are like a holy grail for us. So those guys they have been where we are and they are like already moved ahead, they moved forward. So they have already walked the path. So they gonna help us to get the shortest possible path so that we reach our goal.

During the interview, incubator managers made participants aware of their expectations: time commitment and willingness to network with a broader public network. The following observation excerpt shows such expectations:

At the end of the interviews, the interview panel asked about the time commitment of this candidate. From his launch pad application, it has revealed that this candidate works 35hrs/w and also attends university for study. The panel asked him how he was going to manage his time as the launch pad programme requires a time commitment from the participants.

In the above excerpt, managers show their concern that 35 working hours may restrict the participant to focus on the business start-up programme.

Evidence of market research and approach to target customers

Managers also explored whether participants had conducted market research. Most of the participants revealed some evidence of market research. The following expression captures this theme:

The interview panel then asked him whether he had contacted any retail shop who is willing to buy or any customers yet. He answered that he hadn't made contact yet.

Managers wanted to know how participants, who conducted prior market research, approached the target customers. By exploring this aspect, managers wanted to find out whether participants had a customer-centred approach to their product development. The following expression supports this:

The panel asked him the following question- When we spoke to the wealth fund manager, did you try to pitch or sell your idea, or did you try to discover your idea by listening to them? Bryon replied that he tried to pitch or sell his financial product idea rather than discovering it. (Participant B)

In the above excerpt, managers wanted to explore the underlying intention of participants – whether the participant has the intention to develop the product from customer feedback.

Product knowledge and skills

Participants' knowledge and skills of different aspects of the product were also explored. These different aspects include product content, shelf-life, duration of making products and their uniqueness. The following excerpt supports this:

The panel immediately asked how many hours it took to produce the content for an online course. She replied almost two years ago. Hearing that, the panel said it is going to be very difficult for someone to replicate your idea.

3.1.2 Assessment of idea

Incubator managers assess ideas on the following aspects: financial attractiveness, sample products, and target customers.

Financial attractiveness

Managers assess ideas' financial attractiveness by exploring the cost and prices of the products or services. Through this assessment, they distinguished scalable ideas from lifestyle business ideas. The following excerpt supports this:

The panel wanted to know how many trainees she currently has. She said she currently has ten trainees. The panel calculated that based on her pricing, she would earn £300/month from 10 trainees. One of the panel members said that £300/month is too little revenue from a business sense. He goes on to say that the Launch Pad programme is for those businesses that are viable and sustainable. He also added that her current business idea does not look sustainable. Another panel member added that your business has to scale up/ grow as time passes.

In the above excerpt, managers assess the sustainability and scalability of the product.

Sample products

As part of the assessment, participants were asked to bring sample work in the form of physical or visual forms. Not only does this enable managers to understand their ideas better, but also identifies those ideas that can be tested and validated. The following observation excerpt supports this:

The panel asked whether she does have the prototype of her products. She said she has the visual prototype at this moment. The panel discussed that if she has a real prototype of the products, then she can test her products by selling some of them to dog owners and getting feedback from them.

In the above excerpt, managers emphasise the benefit of having a real prototype. That is, the real prototype allows the participant to test and validate their ideas.

Target customers

Managers also want to distinguish ideas that are focused on customers. This was revealed when participants did not reveal their target customers as part of their idea introduction. I present the following excerpt as representative:

The interview panel member asked him who is going to download his music from apps (i.e. who are the target customers?). He replied everyone would download it. Then he goes on to say old, young customers.

The above finding on incubator managers' assessment of participants and their ideas reveals that they focus on both people and ideas.

3.2 Refining and shaping ideas into opportunity artifacts

3.2.1 Defining target customers

Identifying target customers is the central theme of the business start-up programme. The process of identifying target customers began with defining early adopters – the groups who would likely use the products or services first. This required participants to create customer profiles according to genders, age groups, professions, and geographic locations. The early adopters were further dissected into buyers and user groups, and business-to-business (B2B) and business-to-customers (B2C). As part of defining target customers, participants who targeted businesses were advised to avoid start-up businesses because of their high risk. Below I present an observation excerpt to support this:

Creative Enterprise Manager: Who are your early adopters?

Participant N2: Business owners and employees?

Enterprise Manager: What type of business owners?

Participant N2: Who treats their employees well? We will be looking for especially American companies

Participant A: I know American companies that I can refer to.

Incubator director: How about small business owners? Try the companies on LinkedIn and follow them

Enterprise Manager: What are the unknowns of your business model?

Participant N1: Our customers would be more start-up businesses.

Enterprise Manager: Why is that? **Small businesses are leaner and have fewer numbers of employees.** Forget about the small businesses, go with the company that has a minimum of 50 employees. Look for London-based 50 mature trendy businesses as your target customers. Then create a database of a list of companies outpost American companies and also the best companies in London. Next, send them an email to let them know about your product "American Pie".

The above excerpt shows the incubator managers supported participants to define their target customers. In defining customers, they focused on profiling early adopters and considering associated risks.

3.2.2 Building knowledge domain through analogous and task-designed activities

Analogues. With the examples of well-known companies, their products and task-designed activities, Managers raise participants' awareness or build their knowledge on the following areas: the risk of not knowing customers and launching too big, the approach to interacting

with potential customers, different forms of value propositions, techniques of testing customer interests, and the benefit of developing and testing Minimum Viable Products (MVPs).

Minimum viable product is a strategy for fast market testing of a value proposition, product, service or feature. It could be a real product, a prototypical product, a catalogue/ brochure or an explainer video. **Drop Box used** explainer videos about their product before starting the company and it got thousands of hits. An explainer video explains the benefits and features of the video.

In the above example, the incubator manager used Drop Box's success in using an explanatory video example as the success of a minimum viable product (MVP). The main focus of using the example of Drop Box is to communicate the real-life success story of MVP.

Task-designed activities. In addition to the use of analogues, participants undertook two task-designed activities, called the Overnight Challenge and the Marshmallow Challenge. The Overnight Challenge was a competition between teams who were required to interview people about their food ordering and photograph them in the shortest time. The objective of such a challenge was to familiarise participants with how to approach customers. The Marshmallow Challenge was also a team competition but focused on building the tallest structure with spaghetti with a marshmallow on top. The outcome of the challenge was to show the risk of developing without knowing customers. Below I present a conversation excerpt:

Enterprise Manager: OK, 'overnight task' let's talk about the overnight task that was given yesterday before we finish off the day. We want to see how you approach people in different ways and how you feel about it. Let's say the process is actually to go and have a conversation with strangers. So how did you find out about the overnight challenge task?

Participant L: I find people are quite willing if they are not busy

Participant N1: "I find it a bit of a challenge. There were a couple of things that have impacted especially the time of the day. It was a time when people started leaving their work and were rushing home. It was all about how you approach them, I find it easier to get attention when we say- can you help us? That was really all about our stories. I found an American woman sitting in a park and we shared my **American pie business idea** and she is familiar with the idea."

Participant G: I used "Would you do me a favour" and found it a useful way to approach people.

Participant A: You cannot talk to people on the street when they use their phones, but you take the phone from them.

Enterprise Manager 2: So how about the actual conversation went?

Dan: I found it more different responses in terms of questions. My interviewees not all of them ordered takeaway food

Participant S1: In an overnight challenge interview, I found a guy who orders takeaways for 5 days.

Incubator Director: All of your interview participants of the overnight challenge were interesting, but I want a bit of probing- the underlying response. For example, if the person takes a takeaway every 5 days, it is interesting to find out are they are professionals or they are lazy?"

Participant B 2: We found out people are lazy.

Incubator Director: By asking such interview questions you can find out the early adopters. Did you find out anyone else ordered takeaway food in a group?

Participant H: Another problem is that people do not talk about the topic that we ask for

Participant B 1: One of the challenges of overnight tasks is asking people to take their photographs

Participant A: if we tell people that we are going to start new start-ups people are willing to help.

Incubator Director: The more you know the target group, the more it is to set the boundary.

The above conversation excerpt shows how participants approach their “Overnight Challenge” task and how incubator managers helped them generate insights from it.

1.3 Forming hypotheses and mapping business model to generate insights

Guided by the incubator managers, participants turned their ideas into assumptions or hypotheses. The centre of their assumptions was target customers. Participants formulated their assumptions about the type of target customers, value propositions that link customer needs and desires, market size, distribution channels, cost structure and revenue streams. The following chart (Figure 1) visualises participants’ assumptions or hypotheses.

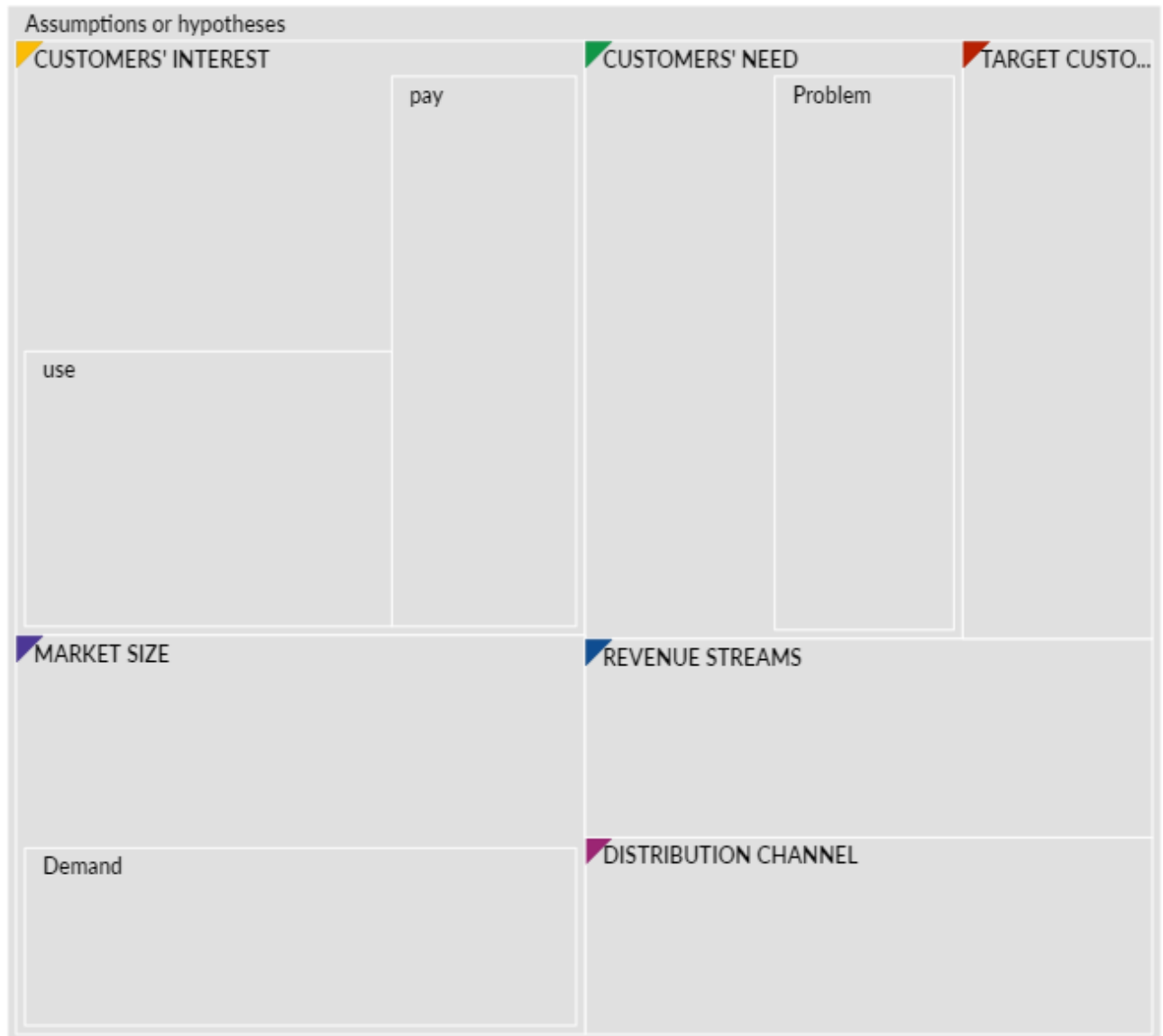


Figure 1 Hierarchical Chart of Participants' Assumptions

The above chart shows the areas in which participants formulate their assumptions. The largest area of the chart is dedicated to generating insight into target customers. The following show participants' assumptions about customer interest:

Participant C: Dental schools might not be interested in using medical visuals.

Participant A: People are willing to use software to look for gigs.

Participant N: Bars of medium size with 1-5 chains that experience high volumes of customers are willing to trial our app

Participant V: Potential donors are going to download the game.

Participant M: Cyclists who shop online need/will be more likely to visit/purchase from a one-stop online shop/marketplace.

The above assumptions highlight participants' conjectures about identifying customer interests in their products or services.

Managers guided participants to map their assumptions onto the blocks of the business model canvas. Mapping hypotheses onto the business model is critical to generate insights that can be used to develop business models and minimum viable products (MVPs) which can be used to test product-market fit.

Enterprise manager: A product or service is not a business, so what is business? A business plan?? But it does not create much value. So here we consider the business model canvas. Business Model Canvas (BMC) tells us how we create, deliver and capture value. How many of you are familiar with the business model?."

Only three participants raise their hands in response to this question. He then presents the 9 building blocks in BM canvas on the projector. However, the presentation of the business model 9 blocks is sequential based on the importance described by him. His provided sequences are as follows:

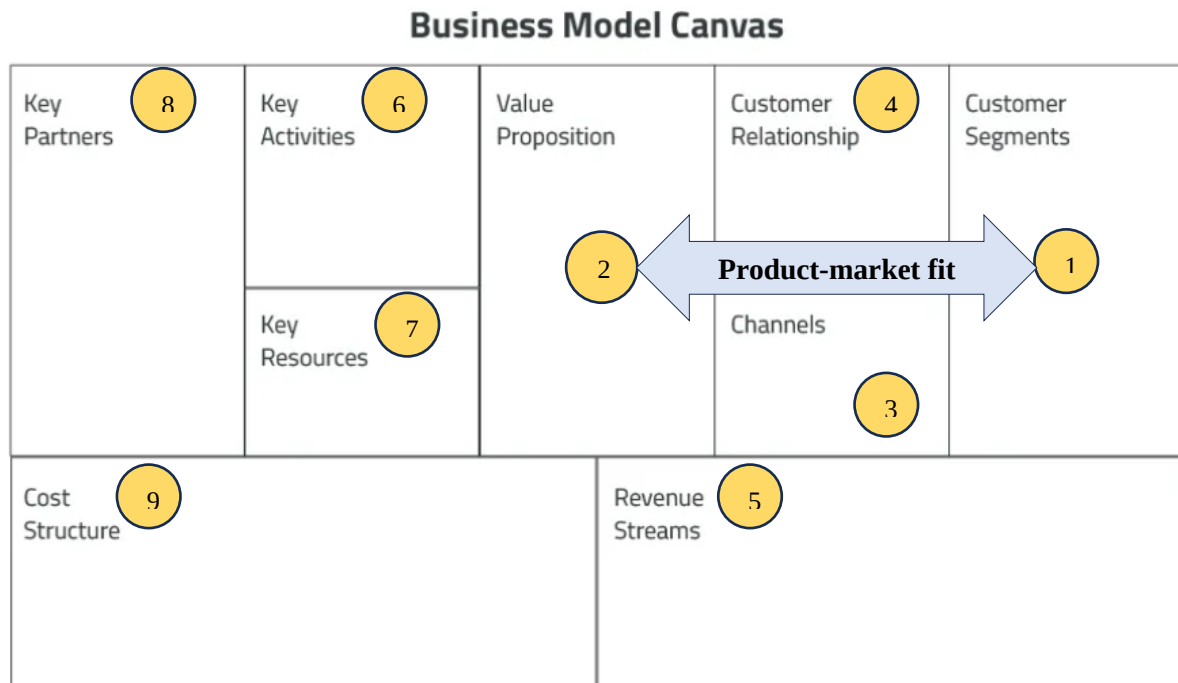


Figure 2 Incubator Managers' Visualised Business Model Canvas

The above sequence of blocks shows a customer-focused business model.

3.2.3 Material prototypes to generate insights

The incubator guided participants to get an insight into customer interests through landing pages, and digital ads. This required them to design and create digital landing pages that represent participants' envisioned value propositions to their target customers. When customers view these landing pages and find their interest in the value proposition, their interest is measured through click-through rate (CTR).

After the creation of draft landing pages, participants were required to showcase them to incubator managers and fellow participants for feedback. Below I provide Participant M's landing page review of incubator managers and fellow participants.

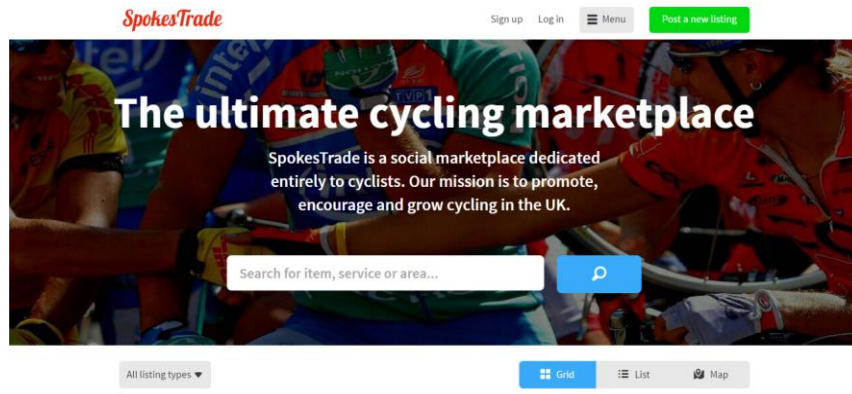


Figure 3 Participant M's Landing Page

A fellow participant: commented "Cycling marketplace on the first heading of the landing page could mean anything under cycling. It is not clear which customers you are talking to."

Incubator Director: Ivan, your landing page headline 1 should talk with your customers. It does not say the benefit of your products or services. Is your landing page targeting broad cyclists like me or cycle enthusiasts like Simon? Who are you targeting?

Participant M: I think cycle enthusiasts.

The above interaction between the incubator manager and participants shows the importance of targeting a niche customer base and communicating the value propositions. The manager believes that concise messages to the target customers increase the likely chance of good test results. This is an evaluation of assumptions.

3.2.4 Transforming insights into expanded ideas

During the market research, participants gathered information about target customers, product features, production cost, product shelf-life, market demand, revenue streams, and competitors. This new information complemented the idea content and hence, became part of the idea. Each new piece of information fills different blocks of the business model, i.e. value proposition, customer segments, revenue streams, cost, and distribution channels. Consequent to the development of the business models, ideas were further augmented. Thus ideas manifest in not only products or services but also business models. Below, I present Participant H's panel discussion excerpt to illustrate this:

H: Recently, we took 52 bottles at a festival, and we sold 51 bottles. We also discovered that smoothies made from the baobab base are much cheaper than the orange base. So, we can save approximately sold 30%. One of the chain retail stores was interested to sell their baobab smoothies, so they asked for 12 bottles of smoothies each week.

Panel: How have you tested your idea? Have you adjusted your product based on the feedback?

H: We remove the honey content from the product based on customer feedback.

Panel: What is the shelf-life of the product?

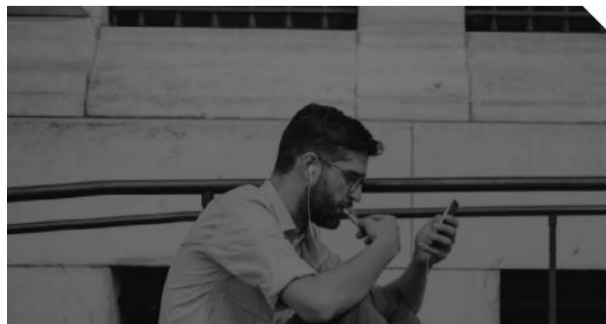
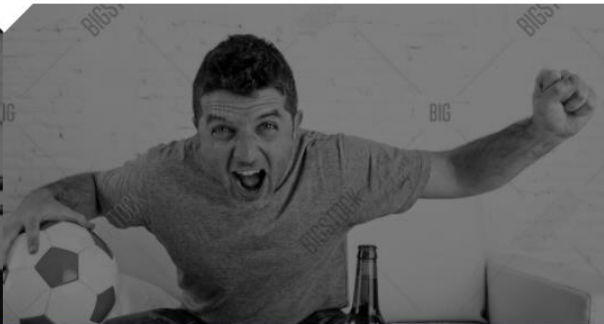
H: One month. We use cold-water pressure (HPP) instead of pasteurisation to extend the life shelf of the product.

The above excerpt shows Participant H augmented their idea as a result of complementary information, i.e., the lower production cost of the baobab base, product shelf-life, and adjustment of product features by removing honey content. This new information contributed not only to their product refinement but also contributed to the development of the business model canvas.

3.2.5 Narratives to establish opportunities' legitimacy

At the end of the start-up programme, participants pitch their ideas to show the existence of opportunities. The pitch was presented through presentation slides. Participants narrated their pitches within the frame of problems, solutions, and opportunities. To frame problems, participants used their personal experiences, values, analogies, and social validation. Opportunity was presented as the external factor such as the industry or market growth where customers would be willing to pay for solutions as services. Depending on the relatedness, participants relate these devices either to problems or solutions space. Below, I used participant B's excerpt to support this:

DAVE and JOHN

 - Bets regularly £50 - 150+ - Uses 10+ bookies = best odds - Uses excel spreadsheet to track - Tired of manual data input - Wants to make smart bets	 - Bets often £5 - 10 - Uses less than 5 bookmakers - Doesn't track his bets - Tired of losing on his fav team - Wants to learn and have fun
--	--

Dave can efficiently track all his betting activities



- Betting Tracker
- Metrics Dashboard
- Sport Articles
- Betting Resources
- Connect and follow users
- Portfolio management

A platform to learn and make informed decisions



- Betting Tracker
- Key Indicators
- Sport Articles
- Betting Resources
- Connect and follow users

INDUSTRY OPPORTUNITIES

Increased need

Data - more important than ever

Customer is changing

Online Sports Bet Industry

Reliability / Analytics

Data-driven science

Wants it now = relevant

2015	2016	2017	2018
€ 37B	40B	45B	50B

Figure 4 Participant B's Pitch

In the above presentation slides, Participant B1 and Participant B2 used Dave and Mark's analogy to frame the problem of two distinct types of target customers: professional bettors and amateur bettors. Based on the situated problems of target customers, they proposed two solutions as service for the fictitious Dave and Mark. To validate the need for their proposed solution, they presented industry growth as an opportunity.

The above finding shows that participants refine and shape their ideas by defining target customers, forming and testing hypotheses, developing material prototypes, and crafting narratives.

4.0 Discussion

Start-up programme selection

The finding shows that the selection is based on both quality participants though the assessment is based on both participants and ideas. This finding is in line with Bergek and Norman's (2008) entrepreneurs-focused selection. Such focus requires incubator managers to select a handful of participants who are likely to refine their ideas according to their support. This is consistent with Bergek and Norman's (2008) "Picking-the-winners and entrepreneur", but such a strategy falls within the pre-incubation process. Adopting such strategies lowers the risk of failure which is the main the only primary objective of the incubator. The incubator's affiliation with the university makes it a more risk-averse-seeking organisation. The selection of participants is determined by incubator managers as opposed to self-selection as an ideal characteristic proposed by Nair et al. (2022).

Transformation of ideas into opportunity artifacts

The findings show that participants' idea refinement begins with defining target customers. Customer need/want is the key ingredient of opportunity (Ramoglou, 2021) or feature opportunity (Santos et al. 2015). From a design entrepreneurship perspective, defining target customers is the first design parameter that conscribe the design to the preferred subset of all objective possibilities (Packard et al. 2021). For example, the choice of target customer for a car maker determines its objective possibilities such as size, colours, and capacities. These objective possibilities are designed to satisfy the subjective needs or the wants of the target customers. Dimov (2016) contended that positional information between entrepreneurs and target customers dictates the deeper structure of venture opportunity. Defining target customers is the core of lean start-up methodologies which aims to discover the known of the defined customers (Ries, 2011). However, my analysis reveals that mitigating risk was part of the defining target customers. Through sharing start-up experiences, incubator managers raise participants' awareness of risks associated with particular target customers. It was encouraged that a start-up, with a focus on business-to-business (B2B), should not target other start-ups or consider start-ups or small businesses as these businesses are financially unstable. This is to avoid the risk of start-up failure.

My findings show that based on the defined target customers, participants set their assumptions and mapped them onto the block of the business model canvas. Mapping assumptions on the business model canvas suggest that participants used the business model canvas as a secondary artifact to develop more concrete artifacts which are venture concepts (Berglund and Glaser, 2021). Assumptions about target customers, their interests and their willingness to pay conceptualise the objective components of ideas. Developing a hypothesis or assumption is the abstract form of an artifact (Berglund and Glaser, 2021) because the test results of assumptions can realised into a more concrete or material form of artifact.

To experiment with assumptions, participants developed landing pages, explanatory videos, and prototypes. These are representative of material artifacts that show manifestations of ideas in digital and physical forms. In other words, ideas are no longer confined to the business model canvas; they are now manifested into material (digital or physical) forms. Such material artifacts enable potential customers to imagine what it would be like to have such products or services. The use of material artifacts enables entrepreneurs to materialise their visions in the present (Berglund & Dimov, 2023) and test customer interests. Incubator managers played a pivotal role in the creation and refinement of landing pages before using them as test tools. The centre of the refinement is the target customers. Through feedback incubator managers, help participants refine landing pages that communicate the target customers. Through the process of creating material artifacts, venture ideas are transformed from abstract artifacts to material artifacts. The purpose of such material artifacts was to prove customer interests. In other words, participants sought to find out what is possible – a possible world-state. Berglund and Dimov (2023) contended that what is not yet possible opens up human aspirations.

The information generated through market research developed not only the blocks of business models but also the material prototypes (e.g. products or services) and the narratives of participants. The development of business models shows the conceptualisation of business ideas. This suggests that participants designed their business models to develop minimum viable products (MVPs) that fit with the market. Such design occurs because of the earlier mapping of the assumptions onto the business model. In this light, the incubator's use of lean-start-up methodologies acts as an invisible shaper in shaping the design of participants.

The findings of participants' pitches show their use of narrative devices to present opportunities. Their narrative devices included personal experience, analogies, values and social validation. They used problems, solutions, and opportunities as templates to frame their venture opportunities. Within the frame, they used narrative devices to show their ideas' legitimacy. The function of this narrative was to present entrepreneurial opportunities with appropriate clarity to the incubator management – the target audience. It was an expectation that participants should present their opportunity within the frame of problem-solution. This finding is consistent with Glaser and Lounsbury (2021) that entrepreneurs construct their stories with conceptual infrastructure drawn upon the type of target audience. This finding advances Bergland and Glaser's (2021) narrative artifacts.

The findings of defining target customers and creating abstract artifacts, material artifacts, and narrative artifacts show that incubator managers deliberately anchored participants' ideas in the favour of the external world. No attention is given to participants' values or motivated intentions that they want to communicate through their products. This is evident in the use of examples or analogues. Managers use exemplar models to build participants' domain-specific knowledge in the aspect of opportunities. Such an approach focuses on connecting the outer world to entrepreneurs or helping entrepreneurs to adapt to the outer world. products to customers (the outer world) but disconnects it from the entrepreneur's (inner) world. The developed products do not act as the interface between the inner and outer world because of the missing motivated intention. In other words, such practice encourages the machine aspect of human efforts where cognition and behaviour become more relevant, but motivated intention becomes less relevant. With the advancement of Artificial Intelligence, the task of product-market fit may be better suited to AI than humans. Hence, developed artifacts do not embody nascent entrepreneurs.

Overall, the above discussion reveals how participants, supported by the pre-incubator, refine and shape their ideas into opportunity artifacts. Formulating hypotheses, prototyping, testing,

and refining are all part of the entrepreneurial design process. The design process portrays the venture opportunity or artifact emergence process. reveals that participants produce hypotheses, prototypes, and narratives that give their ideas in tangible forms similar to artifacts.

5. Conclusion

The finding reveals a design process by which nascent entrepreneurs, with the support of the pre-incubator, transformed their ideas into opportunity artifacts. The process reveals the development of ideas from abstract artifacts to material artifacts to narrative artifacts. The incubator's use of lean start-up methodologies acts as an invisible shaper of the venture idea refinement process. The implication of the finding is that lean start-up methodologies can be used not only to discover customer insights but also to design opportunities. However, such design is not purely based on the entrepreneurs' vision, but on the felicities condition of the external worlds (i.e., target customers) This study contributed to design entrepreneurship literature by advancing Berglund and Glaser's (2021) artifact types and Dimov's (2021) intentional space of opportunity. The implication of the finding is that nascent entrepreneurs' effort to fit in with the external environment while overlooking their vision may lose their distinctiveness. As a consequence, their vision of the new world may never come into reality.

Although the findings extend prior studies, this study has its limitations. I collected and analysed data of nascent entrepreneurs who were being supported through the business start-up programme by a UK university incubator. Therefore, findings of idea refinement and transformation of artifacts may not apply to other nascent entrepreneurs who are not supported through such organisation support systems.

Future research could investigate start-up programmes supported by nascent entrepreneurs and non-supported entrepreneurs. Such focus could shed light on how these two types of entrepreneurs transform their ideas into opportunity artifacts.

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