CRITIQUE

In her seminal work *What Makes Entrepreneurs Entrepreneurial*, Sarasvathy creates a dichotomy between causation, the use of means to identify the most efficient method of achieving a pre-determined goal, and its 'inverse': effectuation, the use of means to establish contingent goals over time (2005, p.2). This has sparked an intense academic debate about the merits of using one approach over the other (Brinckmann, 2010, p.24). Chandler et al. argue that we should seek to validate both sides of the debate and therefore this critique will evaluate three of the distinctions Sarasvathy makes between causation and effectuation: prediction vs control logic; novice vs expert; and corporate vs start-up (2011, p.375). There is a lack of academic consensus over the distinct units of analysis which quantify effectuation (Read and Dolmans, 2012, p.35). Therefore, I will clear about how each author respectively measures it.

PREDICTION VS CONTROL LOGIC

Sarasvathy uses two logics to exemplify the difference between causal reasoning and effectual reasoning (2005, p.6). Causal reasoning follows the notion that "*to the extent that we can predict the future, we can control it"*. Effectual reasoning follows the notion that "*to the extent that we can control the future, we do not need to predict it*." Chandler et al. concur with these principles, suggesting the strategic approach of business plan development represents "institutional conformity" to the causation approach (2011, p.377). However, other scholars argue that these logics may not necessarily be considered mutually exclusive.

Fisher presents evidence that causation and effectuation can successfully occur simultaneously in the instance of TripAdvisor (2012, p.1034-5). Using the criteria of characteristics defined by Chandler et al., Fisher's analysis detected strong behavioural alignment within the company towards causation (such as the identification and assessment of long-run opportunities in developing the firm) but also to effectuation (such as a response to unplanned opportunities as they arose). This suggests that behaviours associated with causal and effectual reasoning can be enacted simultaneously in the same venture (2012, p.1035). However, from further research, Fisher also clarifies that in none of his case studies were behaviours associated with causation responsible for the development of the venture alone (2012, p.1039). This suggests that effectual reasoning may be used successfully with or without causal reasoning, but causal reasoning cannot be the only decision-making logic employed by an enterprise.

Furthermore, Read and Dolmans contend that Sarasvathy's own findings showed that over 63% of the expert entrepreneurs used effectuation more than 75% of the time, which implies these experts used other approaches the rest of the time (2012, p.36). They argue the importance of the causal approach and for using prediction under certain circumstances, dependent on market uncertainty (2012, pp.39-41). Read and Dolmans even suggest that market information and predictive skills could themselves be considered means which would inform the effectual development of contingent goals (2012, p.35). This blurs our initial distinction between the logics entirely.

In exploring the benefits of casual logic, Brinckmann et al. find that prediction techniques, such as business planning, increase the performance of both new and established small firms (2010, p.25). Moreover, they find that merely going through the motions of business planning has a positive effect on a business' performance, regardless of the eventual plan produced from this process. Therefore, Brinckmann et al. conclude that an open-minded and dynamic approach, is most beneficial. This creates a cycle where planning can provide the foundation for doing, doing can create learning and learning can increase the detail of planning. Therefore, the application of both causal and effectual logic to the actions of planning, learning, and doing may lead to a business' success.

EXPERT VS NOVICE

In her paper *Knowing What to Do and Doing What You Know*, Read and Sarasvathy explore effectuation in the context of expertise (2005). However, they do not quite succeed in impartially arguing for effectuation "as *a* form of entrepreneurial expertise" as opposed to effectuation "as *the* form of entrepreneurial expertise". This is emphasised in the graphic (copied below in Figure 1) which places the expert entrepreneur as a highly experienced effectual reasoner, whereas causation is associated with novice entrepreneurs (Read and Sarasvathy, 2005, p.57). This aligns with Ericsson et al.'s theory that experience is crucial for developing expertise (2018, p.751).

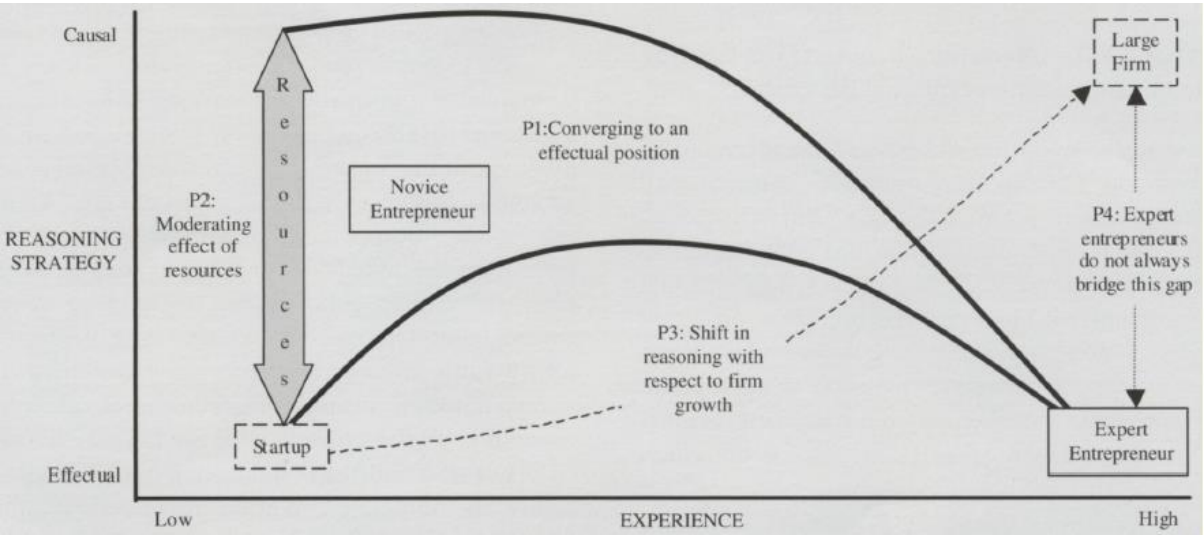

Figure 1: Type of Reasoning Approach with Respect to Experience and Firm Lifecycle (Sarasvathy, 2005, p.57)

Furthermore, Read and Sarasvathy draws parallels between this and Larkin et al.'s. principle (1980). They argue that forward thinking, to act based on information cues, is employed by experts, and that backward thinking, to validate action based on information cues, is employed by novices (2005, p.54). They compare stakeholder commitments to information cues and proposes that expert entrepreneurs, who use the effectual approach of acting

according to their stakeholder relationships, may be considered forward-thinking. On the other hand, Read and Sarasvathy argue that novices, who use a causal approach to back-up their goals, such as with market analysis, may be considered backward-thinking.

However, Chandler et al. argue that stakeholder pre-commitments may be obtained through causal means too (2011, p.384). In this process, parties are identified, the product or service offerings are specified, and the nature of the relationship is defined. Furthermore, alliances feature prominently in management literature which also emphasises logical (causal) decision-making strategy (2011, p.386). Chandler et al. do not invalidate the relationship between effectuation and pre-commitments but instead disprove the exclusivity of this connection. They are that pre-commitments is a valid characteristic of both causation and effectuation but for different reasons concerning their application (2011, p.387). On the one hand, effectual entrepreneurs use pre-commitments to maximise their control of the future, to reduce uncertainty, to maximise their opportunities for affordable loss, and to maintain flexibility (2005, pp.5-6). On the other hand, causal entrepreneurs use pre-commitments and alliances to acquire resources and implement planning. This weakens Read and Sarasvathy's argument for associating effectuation and expertise with forward thinking and associating causation with backward thinking.

Furthermore, Engel et al. (2014, p.16) argue that effectuation theory can be applied to the study of all entrepreneurs, experts, and novices alike, because their findings show that effectuation and entrepreneurial self-efficacy are general constituents of human reasoning rather than a distinct features of expert thinking. They even argue that confidence in entrepreneurial ability can overcome an experience deficit in novice entrepreneurs (2014, p.16). Therefore, Sarasvathy's tendency to associate effectuation with experts and causation with novices is shown to be unnecessary and further research over units of expert heuristics is required before causation is ruled out completely as a novice's logic (Read and Dolmans, 2012, p.33).

STARTUP VS CORPORATE

Read and Sarasvathy present the irony of effectuation as its lack of relevance for a corporate environment, to the extent that causal logic is necessary for a firm to survive in the long term (illustrated in Figure 1, 2005, p.57). They suggest that only a small subset of expert entrepreneurs will successfully make the transition from an entrepreneurial firm to a large corporate one. Read and Sarasvathy even argue that many effectual entrepreneurs should leave an organisation at this point of growth, because they may hinder the transition to a causal business model (2005, p.58). This implies that experts who make this transition identify the need for causal logic and implement it in their corporate model, undermining Sarasvathy's previous argument for the association of effectuation with expertise.

Nevertheless, the research of Brettel et al. concurs with the principle of effectuation for the start-up and causation for the corporate (2012, p.168). Their findings show that the causal dimensions of being goal-driven, preferring expected returns and overcoming the unexpected show high performance in projects where innovativeness is low (such as a corporate environment). In contrast, an effectual preference for affordable loss, partnerships

and acknowledging the unexpected shows a high performance in projects with high innovativeness (such as a start-up environment).

Furthermore, Brinckmann et al.'s research on business planning found that causal activity has a stronger positive effect on established firms (2010, p.25). They suggest uncertainty, limited prior information and absence of relevant planning structures and procedures limit the relevance of causation for new firms, so effectuation is more appropriate.

In their model for a new venture creation scenario, Chandler et al. present effectuation as a multidimensional formative construct with four sub-dimensions: experimentation; affordable loss; flexibility; and pre-commitments (2011, p.383).

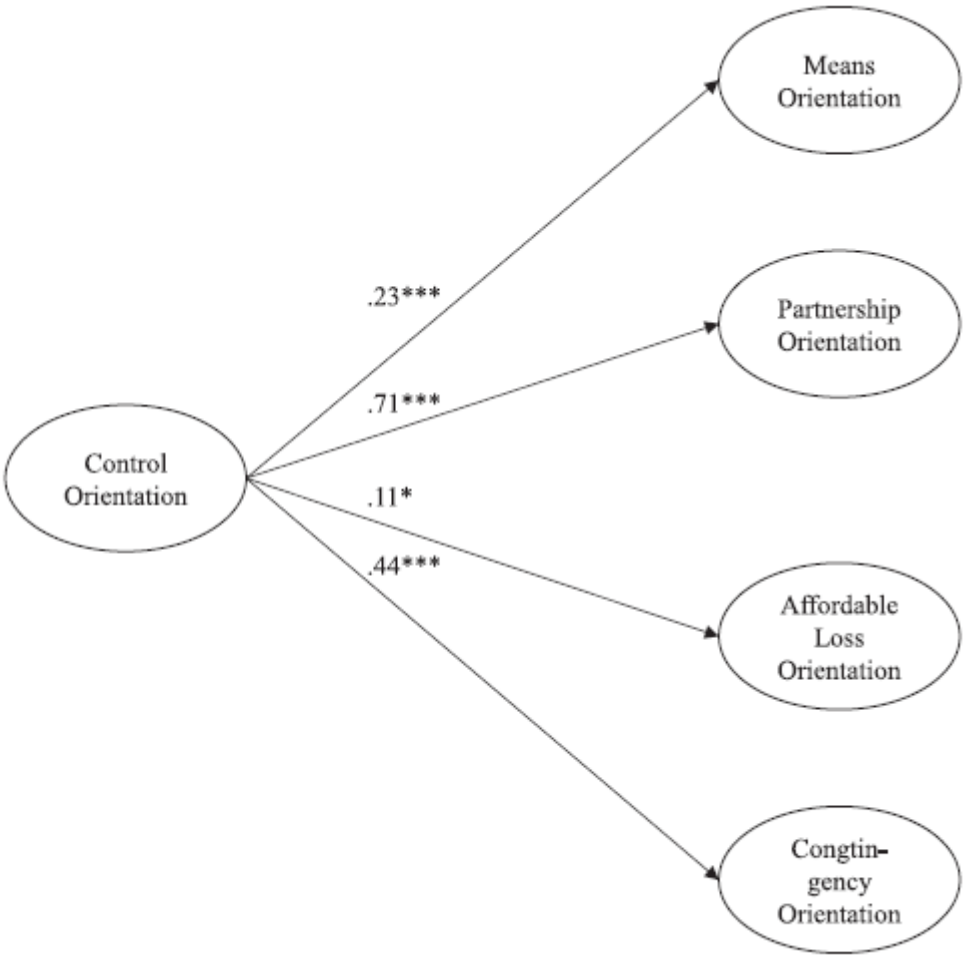

Figure 2: Model of Effectual Orientation (Werhahn et al., 2015, p.311)

However, Werhahn et al. argue that focusing on effectuation at this smaller level is limiting its potential (2015, p.312). Instead, they elevate their effectual construct to a corporate context. They define effectual orientation as a firm level standpoint which fosters effectual entrepreneurial thinking amongst the individual actors within that firm (2015, p306).

Werhahn et al. criticise Chandler et al. (2011) for deviating from Sarasvathy's original conceptualisation of effectuation by defining its characteristics in the terms of experimentation, flexibility, and pre-commitment (2015, p.312). Instead, they substitute in their own features to quantify effectual orientation, presenting an alternative multidimensional formative construct. They apply effectual logic to create the notion of a corporate control orientation, where a managerial strategic direction will enable employees to shape and influence the firm's environment (2015, p.308). In Figure 2, control orientation is then modelled as the antecedent to the four other dimensions of effectual orientation they identify (2015, p.311):

- **Means orientation:** members pool resources towards their organisation's vision
- **Partnership orientation:** members co-create the organisation with its partners
- **Affordable loss orientation:** members pursue initiatives that offer a return perspective rather than a high financial return
- **Contingency orientation:** members take advantage of new market opportunities

Modelling effectuation on this scale shows that its logic is not limited to small and medium start-up enterprises but applicable across varied scales of business, all the way up to corporate structures.

CONCLUSION

In conclusion, since Sarasvathy established her initial dichotomy between causation and effectuation and advocated for the latter over the former, research has shown that the distinction and application of each is not quite so clear cut as its initial presentation (Read and Dolmans, 2012, p.35). Whilst both causation and effectuation would benefit from scholarly consensus over their distinct units of analysis, both methods of decision-making logic have been proven to be valid in different entrepreneurial contexts (Chandler, 2011, p.375).

REFLECTION

"Going In Blind" was a project at the University of Bristol Centre for Innovation and Entrepreneurship where our team researched and designed ways to create value for visually impaired people (Jenkins et al., 2022). In this reflection, I will evaluate Sarasvathy's dichotomy of causation and effectuation and develop its critical analysis in the context of our project: a novice, start-up environment.

PREDICTION VS CONTROL LOGIC

Scholars have developed criteria to measure how businesses use both causal and effectual logic. I will apply these to my own project to see if it supports Sarasvathy's dichotomous setup or shows instead that these alternative decision-making logics can exist simultaneously in an entrepreneurial context (Fisher, 2012, p.1035).

Chandler et al. develop units of analysis to quantify effectuation and causation (2011, p.375). Fisher applies these criteria to six business case studies and uses the results to demonstrate varied company approaches towards causation and effectuation (2012, p.1034-5). Therefore, I have decided to apply these similar measures to Going in Blind. A 'Y' or 'N' is used to indicate whether a particular item was completed during the project. The results are presented in Figure 3, a table structured similarly to Chandler et al.'s model (2011, p.382).

Items	Construct	Y/N
We analysed long run opportunities and selected what we thought would provide the best returns.	Causation	Y
We developed a strategy to best take advantage of resources and capabilities.		N
We designed and planned business strategies.		Y
We organized and implemented control processes to make sure we met objectives.		Y
We researched and selected target markets and did meaningful competitive analysis.		Y
We had a clear and consistent vision for where we wanted to end up.		N
We designed and planned production and marketing efforts.		N
We experimented with different products and/or business models.	Experimentation	Y
The product/service that we now provide is essentially the same as originally conceptualized.		N
The product/service that we now provide is substantially different than we first imagined.		Y
We tried a number of different approaches until we found a business model that worked.		N
We were careful not to commit more resources than we could afford to lose.	Affordable loss	Y
We were careful not to risk more money than we were willing to lose with our initial idea.		Y
We were careful not to risk so much money that the company would be in real trouble financially if things did not work out.		N
We allowed the business to evolve as opportunities emerged.	Flexibility	Y
We adapted what we were doing to the resources we had.		Y
We were flexible and took advantage of opportunities as they arose.		Y
We avoided courses of action that restricted our flexibility and adaptability.		N
We used a substantial number of agreements with customers, suppliers and other organizations and people to reduce the amount of uncertainty.	Pre-commitments	N
We used pre-commitments from customers and suppliers as often as possible.		Y

Figure 3: Causation and Effectuation criteria adapted from Chandler et al. (2011, p.382)

According to these criteria, my team showed no clear overall preference for either causation or effectuation, as some aspects of all constructs remain un-attempted or incomplete:

- We strategized to find an entrepreneurial niche using **causal** competitive analysis and business modelling, but our vision was not consistently clear, nor did we design operation models.
- Our direction as a team is substantially different from our starting point, however, we did not sufficiently **experiment** with our current product's business model.
- The team only spent money on one experience. The remainder of our financial planning is hypothetical so the **affordable loss** subdimension of effectuation is difficult to evaluate in the context of my project.
- Our business evolved according to our research, but some convergent decision-making was required to move the project forward, which reduced its **flexibility**.
- We attempted to **pre-commit** and engage stakeholders straight away, but this process took longer than expected and it did not yield enough evidence to reduce our uncertainties significantly.

My research aligns with Fisher's evidence that causal and effectual reasoning can be enacted in the same venture (2012, p.1035-9). However, it does not validate whether

effectual reasoning can be independently successful without causal reasoning, or vice versa. Nevertheless, I would argue that both logics benefited the team in moving our project forward. We gathered information and used prediction, such as for researching and selecting target markets for meaningful competitive analysis. Our example aligns with Read and Dolmans suggestion that this may be helpful for navigating new entrepreneurial spaces, because we were initially unfamiliar with the landscape of the visually impaired market (2012, pp.39-41).

Furthermore, I agree with Brinckmann et al.'s finding that merely using causal logic and business planning had a positive impact on our learning and doing and consequently improved our project's performance (2010, p.25). Therefore, I believe that our project supports their conclusion that a dynamic approach between both reasonings creates an optimum innovative environment.

EXPERT VS NOVICE

As demonstrated in Figure 1, Read and Sarasvathy suggest that the highly experienced expert entrepreneur prefers effectual reasoning and the novice entrepreneur will develop a clear preference for effectuation as their experience progresses (2005, p.57). Our team were relative novices at the beginning of this project. In Figure 4, I have used Read and Sarasvathy's axes to model how our type of reasoning changed with our experience over the course of the project's lifecycle. The team's experience is classified as "moderately low" at the end of the project lifecycle, which is an ambiguous term, but this is intended to relate the graph to the initial stages in Read and Sarasvathy's model.

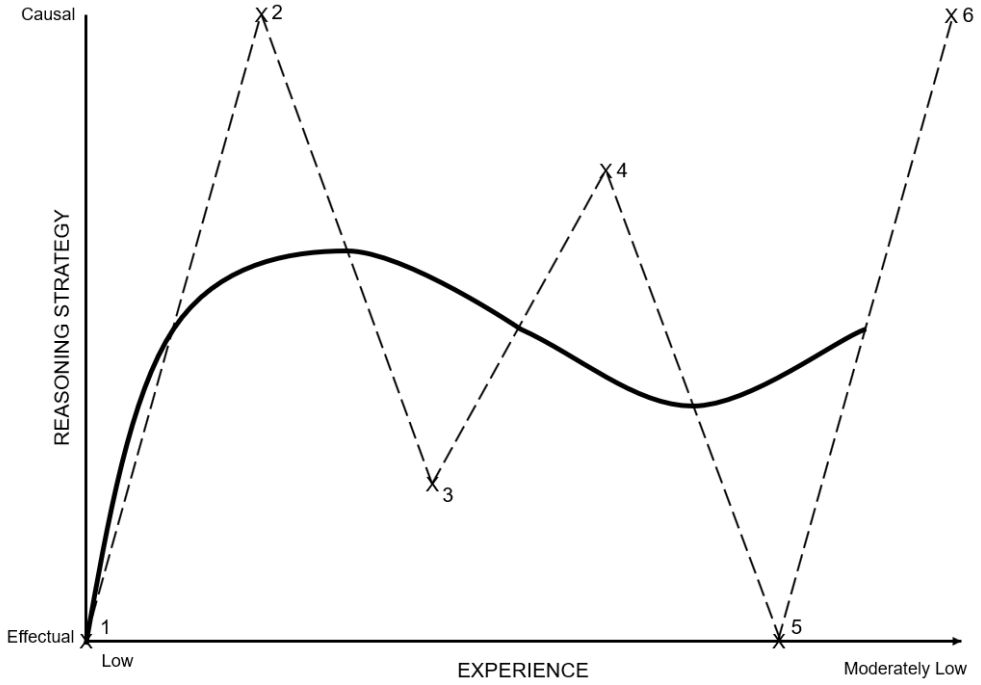

Figure 4: Type of Reasoning Approach with Respect to Experience and Project Lifecycle

The different stages of the project lifecycle are marked 1-6 and may be classified as follows:

1. **Entrepreneurial alignment and autoethnography:** this was a highly effectual evaluation of our team's identity, knowledge, and resources – our means (Sarasvathy, 2005, p.3).
2. **STEEPLE and market analysis:** we analysed the landscape of the visually impaired market using social, technological, economic, environmental, political, legal, and ethical lenses (Mooreville, 2020). This was a highly causal process.
3. **Autoethnography in entertainment:** As a substitute for visually impaired participants, the team took an autoethnographic approach to researching the entertainment space. This was a mostly effectual process.
4. **Semi-structured interviews, participant profiling and value proposition:** Working with visually impaired participants developed our causal strategies and market analysis, however our method of obtaining these participants was mainly effectual.
5. **Ideation, concept capture and autoethnographic validation:** We worked with participants in an effectual manner to prototype and iterate through our ideas.
6. **Business planning, market analysis and financial forecasting:** we used causal techniques and structures to formalise the business.

The results of this diagramming exercise show that the team not only used a combination of causal and effectual strategies to implement the project, but also that there is no clear trend to show a preference towards one or the other over time. Instead, different logics were implemented when they were the appropriate method for progressing the project. This aligns most with the central region of Read and Sarasvathy's graph, where learning entrepreneurs use a combination of causal and effectual techniques to facilitate the development of their business (2005, p.57).

Furthermore, it is pertinent to clarify that the participants and stakeholder pre-commitments we engaged were established through both effectual and causal methods, as proposed by Chandler et al. (2011, p.384). Following this proposition, some participants were collected in a causal manner through being identified online and contacted for a specific purpose. Other participants were reached effectually through our network. All participants were used to reduce our uncertainty (an effectual characteristic) and implement our planning (a causal characteristic). This validates stakeholder pre-commitments as a characteristic of both causation and effectuation, not just a feature excusive to effectual logic (2011, p.387).

I believe this process also demonstrates Larkin et al.'s forward thinking, because we acted according to the information cues presented by our participants, rather than using them to validate the actions we had already taken (1980). This shows that Read and Sarasvathy's absolute parallels between forward-thinking and effectual experts versus backward-thinking and causal novices creates an unnecessarily simplistic and binary association (2005, p.54).

Nevertheless, throughout this project, our team did not consciously follow or evaluate our strategy against either of these decision-making logics. Given our lack of experience and elf-awareness when we were using effectual principles, our team's actions illustrate Engel et al.'s theory that effectuation and entrepreneurial self-efficacy are general constituents of human reasoning rather than distinct features of expert thinking (2014, p.16). Our

experience demonstrates that Sarasvathy's tendency to associate effectuation with experts and causation with novices is profuse.

STARTUP VS CORPORATE

Finally, although our project is still very much in the start-up phase of its development, the structure and culture of our team may still be evaluated against research regarding effectuation and causation in a corporate context.

I have already demonstrated in Figure 4 how our team's use of techniques and structures to formalise the business in stage 6 resulted in considerable causal reasoning. The mandate to create these strategies was born out of university assessment requirements, which perhaps ironically supports Chandler et al.'s claim that business planning represents "institutional conformity" to causation (2011, p.377). However, it also aligns with Read and Sarasvathy's argument that effectuation is less relevant to a corporate environment, and that transforming into a large firm requires causal thinking (2005, p.57).

If our team had not been required to produce a business plan at this stage in our development, we would have dedicated more time to fostering pre-commitments and partnership orientation (Werhahn et al., 2015, p.307). Our desire to keep engaging stakeholders to develop our concept further suggests that as a small enterprise, we were more naturally inclined towards effectual thinking. Although we acknowledge the eventual necessity for employing it, causal reasoning felt forced to us.

To evaluate the extent of our team's orientation with effectuation, I will compare our project mission and values, which were established through Jarman's Entrepreneurial Alignment Canvas exercise (2019), to Werhahn et al.'s model of effectual orientation (2015, p.311).

Using the Entrepreneurial Alignment Canvas is an inertly effectual exercise because it identifies a team's critical competences and resource requirements (Jarman, 2019). This overlaps with Werhahn et al.'s effectual subdimension of means orientation, which encourages organisational members to pool their relevant resources to fulfil an overarching organisational mission (2015, p.307). In Going in Blind, we discovered our network included a close contact with severe visual impairment and their associated charitable support contacts too (Jenkins et al., 2022). Understanding the tangibility of this source for our primary research was greatly beneficial for a team which lacks direct personal lived experience with severe visual impairment.

Our mission to drive the accessibility and social impact of our project was summarised into three key aims (Jenkins et al., 2022):

- **Value over profit:** our project should be meaningful to the visually impaired and to us.
- **Empathy in ethics:** we should treat the subject with sensitivity, respect, and human focus.
- **Open working environment:** we will foster clarity, learning and creativity within our group.

On comparison with Werhahn et al.'s model, our three key aims are shown to align with three of the subdimensions for effectual orientation (2015, p.306-9).

"Value over profit" aligns with affordable loss orientation because it suggests that our team will decide what we are willing to lose to follow the course of action determined by our project (Dew et al., 2009, p. 110).

"Empathy in ethics" aligns with partnership orientation because it suggests a people dependency over an effect dependency (Sarasvathy, 2005, p.7). Therefore, our team aspires to co-create our organisational future together with our target visually impaired consumers (Werhahn et al., 2015, p.307).

"Open working environment" aligns with control orientation because it suggests that every member of our team has a stake and may exert a shaping influence on the strategic direction of the business (Werhahn et al., 2015, p.308).

Due to these effectual values and preferences and the highly innovative context for our start-up project, Brettel et al.'s theory ultimately reassures me that our strategy is valid and that our project will therefore perform successfully in the future (2012, p.168).

CONCLUSION

In conclusion, I have evaluated Sarasvathy's dichotomy of causation and effectuation, and the academic frameworks that expand on these principles in the context of my own project. I have demonstrated that a novice, start-up environment may employ effectual reasoning consciously or unconsciously, if it has the confidence to do so (Engel et al., 2014, p.16).

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