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Understanding effectual decision-making in a science-based business:

The case of Hart Biologicals¹

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INTRODUCTION

The purpose of this case is to explore how science-based entrepreneurs identify and evaluate opportunities. The case focuses on a biotechnology company, Hart Biologicals, founded in 2002 by Alby Pattison. In particular, the case explores how Alby, the founder and Managing Director, employs effectual decision-making in the pursuit of new opportunities. In addition, the case challenges students to consider the impact of effectual decision-making on the performance and behaviour of a family firm. The aim is to offer an in-depth account of opportunity identification and effectual decision-making from an entrepreneur's perspective, providing a contextualised exploration of entrepreneurial experience in practice.

In the field of innovation research, prior literature has generally focussed on science-based innovations and how to render these into commercial products (Tushman & Anderson, 2004). In addition, innovation as the translation of ideas into commercial products and services has long been considered central to the entrepreneurial process (Drucker, 2002; Kanter, 1984; Schumpeter, 1942). A distinction can be made here between *invention*, something new which is conceived or created, and *innovation*, which is about the application of new ideas and their wider diffusion (Khilji, Mroczkowski, & Bernstein, 2006). Consequently, there is a strong link between innovation and entrepreneurship, and the two are often simultaneous as new opportunities are identified and exploited in the pursuit of profits and the drive for growth (Tidd & Bessant, 2011). However, the decision-making processes of entrepreneurs – and how they identify, evaluate and pursue business opportunities – is considered to be a poorly understood phenomenon (Shane, 2012), particularly in the context of science-based business (Pisano, 2010).

Understanding effectual decision-making

Causal – or predictive – logic is where the entrepreneur first selects a goal and then chooses between a given set of means, or seeks to acquire such means to achieve the selected goal (Sarasvathy, 2001). An example used by Sarasvathy (2001) is that of the cook who creates a meal from a recipe (causal logic) versus the cook who envisages potential meals from the ingredients that are to hand (effectual logic). Thus, Sarasvathy (2009, p. 73) suggests:

“Causal strategies are useful when the future is predictable, goals are clear and the environment is independent of our actions; effectual strategies are useful when the future is unpredictable, goals are unclear and the environment is driven by human action”

Effectual decision-making is, therefore, closely associated with opportunity recognition (Dew, Read, Sarasvathy, & Wiltbank, 2009), a central concept in the field of entrepreneurship. Entrepreneurship research has focused on attempts to understand how individual entrepreneurs make decisions under conditions of uncertainty (Alvarez & Barney, 2005). Effectual decision-making is considered to be an essential part of the entrepreneurial process of undertaking a new venture (Zivdar, Imanipour, Talebi, & Hosseini, 2017), such as an acquisition, and helps us to understand how entrepreneurs identify, evaluate and pursue new opportunities (Pattinson, 2016). The traditional view of decision-making in organisations adopts a rational view where the goal is set from the beginning and the means are gathered in order to fulfil the goal (Eisenhardt & Zbaracki, 1992). Sarasvathy (2001), on the other hand, contends that entrepreneurs adopt an alternative logic – effectuation – when the means are known to them, but not the goals.

The concept of effectuation was first developed by Sarasvathy and introduced as an alternative decision-making logic used by serial entrepreneurs (Sarasvathy, 2001; Sarasvathy,

Dew, Velamuri, & Venkataraman, 2003). Under conditions of uncertainty Sarasvathy (year) considers how entrepreneurs leverage three main assets, i) their prior knowledge, or know-how, ii) their identity, or who they are, and iii) their networks, or who they know. By leveraging these assets, the entrepreneur brings together the goals and the means, resulting in new ideas, partnerships, products and markets that could not have been foreseen at the start of the process. The logic of effectual decision-making has been linked to entrepreneurial capabilities (Wilson & Martin, 2015) and is considered to be a significant factor affecting start-up decisions. Investment in new ideas are also based on the principle of affordable loss, which means that the entrepreneur only commits to an investment that she/he can afford to lose, and to which the process has to be adapted (Sarasvathy, 2009).

According to Sarasvathy (2001), effectuation is not better than causation, but it is more suitable in situations when the means are limited and the future is uncertain. Effectuation differs from causation, where there is a predetermined goal and the process to achieve it is planned in accordance with a set of given resources. Sarasvathy (2001) argues that such causal logic does not suit entrepreneurial processes that are inherently characterised by uncertainties and risks. This means that the entrepreneur is more likely to use a causal approach when they have more resources, or act within a large corporation and/or in a stable environment. She argues that this approach has the benefit of being less risky because the entrepreneur will only invest what they can afford to lose. It is more likely to yield unexpected results (Kalinic, Sarasvathy, & Forza, 2014).

HART BIOLOGICALS

Prior to establishing Hart Biologicals³ Alby Pattison had been an experienced senior biochemist working for a global biotechnology company. However, after more than 20 years

³ More details of the company can be found on its website: <https://www.hartbio.co.uk>

working in a large organisation, Alby decided the time was right to start his own business, as he explains:

“Really the business started because I’d identified an opportunity, and I was interested in taking it forward, so we set off as a one product company in 2002”

So, in 2002, Alby’s new company was founded. Hart Biologicals is a biotechnology company manufacturing a range of ‘in-vitro’⁴ diagnostic products for use in the detection, prevention, and monitoring of medical conditions related to haemostasis and platelet function (Hart Biologicals, 2018) . Used in combination with an electronic instrument, the company’s products can determine how quickly or slowly blood clots for patients being treated with warfarin, a medication used as an anticoagulant (blood thinner). Hart Biologicals currently employs 12 staff and the company is currently involved in all areas of coagulation and platelet aggregation. The company turnover has risen from £100,000 in 2003 to £2.6 million in 2017.

Company background

Hart Biologicals started in a small incubator unit on an industrial park, employing just three members of staff. The company initially manufactured a single product, ‘Manchester Capillary Reagent’, a product required for the effective management of patients being treated with a product called Warfarin. Warfarin is an anticoagulant (blood thinner) and has a wide range of applications, including treating patients who have had heart valve replacement surgery, deep vein thrombosis, and sufferers of atrial fibrillation (irregular heart beat). There are about one and a half million people in the UK who have been prescribed Warfarin and they must be monitored regularly. Manchester Capillary Reagent provides an effective testing

⁴ ‘In-vitro’ refers to the technique of performing a given procedure in a controlled environment outside of a living organism (see, https://mpkb.org/home/patients/assessing_literature/in_vitro_studies).

system for monitoring the administration of Warfarin to patients undergoing such anticoagulant therapy. Alby had purchased the rights to manufacture and distribute Manchester Capillary Reagent from the Thrombosis Reference Centre at Withington Hospital, Manchester because:

“The [Withington] hospital was closing and merging with the Wythenshawe hospital in Manchester and they couldn’t take manufacturing with them... and so I ended up on their doorstep with the knowledge of how to make the product, [and] the knowledge of the technology around it”

Alby knew that the product offered a cost-effective solution to the therapeutic monitoring of Warfarin (also known under the brand names Coumadin, Jantoven, Marevan, Lawarin, Waren and Warfant). Due to current medical trends, hand held monitors have been developed to determine a patient’s Warfarin dosage (called the International Normalised Ratio (INR) value) using a finger-prick blood test. However, these devices are expensive and the freeze-dried strips these devices use to measure the patient’s blood sample can cost between GBP £2-3 per test. The Manchester Capillary Reagent, on the other hand, uses a wet chemistry method rather than a freeze-dried strip. Due to this limitation, the cost of a test using Manchester Capillary Reagent costs around £0.10 per test. This means that in the period of just over a year Manchester Capillary Reagent becomes much more cost-effective to use. It still requires a finger-prick blood test and can be used by nurses in a residential setting, as well as in GP’s surgeries and hospitals, which also makes it easy to administer.

Serving a niche market

Hart Biologicals was initially set up to supply Warfarin, a specialised innovative product, to a very specific, niche market, as Alby explains:

"Hart was set up to serve a very niche market and the business was set up specifically to be a niche business. The sector, certainly in Western Europe, is dominated by 5 or 6 huge multinationals. If a small company like us tried to go head to head with the big guys we'd be beaten on price every time. So, we decided to go for the business that the big guys are really not interested in"

However, following the company's initial success as a Warfarin manufacturer, Alby soon saw the need to broaden its range of products to meet increasing market demand. This meant not only increasing the company's staffing levels due to the increased demand for products, but it also highlighted the need to ensure that the best facilities were available in order to broaden the product range. So, in August 2009, Hart Biologicals moved to purpose-built premises. Within the move, a new fully automated bespoke freeze dryer was purchased which allowed Hart Biological's scientists to control the development and production process with upmost precision. Hart Biologicals are currently involved in all areas of Coagulation and Platelet Aggregation and produce a range of products for that market. It has built an extensive global network of distributors from South America to Asia.

Organic growth or acquisition?

To date, Hart Biologicals had pursued a strategy of organic growth, selling its 'own brand' products to a niche market, in addition to manufacturing branded products on behalf of other companies. However, Alby had not set out to be a contract manufacturer. His original intention has been to produce a range of 'own brand' products that would sell under the banner of 'Hart Biologicals' and he would have been satisfied with pursuing that opportunity. Nevertheless, when other companies started seeking Hart's scientific expertise and, considering how aggressively that had enabled the business to grow, Alby had been forced to recognise the potential of the contract manufacturing side of his business. He now felt he had

to focus on these two strands of the business. The first strand is Hart Biological's own-labelled products which are sold through various distribution networks. The second strand, the contract manufacturing work, is where the company sells its clinical capabilities to other firms. As Alby explains:

"On the contract manufacturing side things have gone incredibly well, the own label materials are growing quite well, but the contract manufacturing really exceeded all expectations. We're now working in the USA, two big companies in Germany and we manufacture products for a number of national quality schemes around the world. Our name is getting more and more known out there"

Alby is now looking to expand Hart's range of products in order to grow the business and he has spotted a potential opportunity to acquire a smaller firm:

"We've got a potential acquisition in our sights at the moment. Again, it's a symbiotic business. It's still working in the haematology area, but it doesn't compete with our products it actually adds to our products. It's a very similar business. It's owned by a guy who used to work in hospital labs, his brother works with him, there are four of them, and I'll be honest – it makes money hand over fist, it really does"

Having identified that the potential acquisition was likely to be very profitable, Alby had already spoken to the bank about raising the capital required for the acquisition. However, over the years Hart Biologicals had grown organically, through increased sales based on its growing reputation, and this had allowed staff to grow into their roles and gain experience gradually. Hart is also very much a family firm. Alby's brother, an engineer, is the Technical Manager, and Alby's wife manages the 'front desk' and administration team. Alby is excited by the prospect of the acquisition but, at the same time, he is concerned that such a new

direction, although signalling the biggest and most rapid period of growth and change for the company, would also signal the end of Hart Biologicals as a family firm.

SUMMARY

Alby Pattison now has an important decision to make regarding the future direction of Hart Biologicals. Should he continue to pursue organic growth through increased sales or to go ahead with the proposed acquisition of another firm? The proposed acquisition will help the business grow more quickly and will add new products to Hart's growing range of 'in-vitro' diagnostic products. However, acquisition strategies present a risk for small firms in terms of integrating the acquired firm into their current strategy. This case is useful in highlighting how effectual decision-making is employed by the entrepreneur to identify, evaluate, and pursue this new opportunity. It advances our understanding of effectual decision-making in the context of a science-based small firm.

Questions

1. To what extent was Alby's decision to set up Hart Biologicals an example of effectual decision-making?
2. Is organic growth a suitable strategy for Hart Biologicals, a science-based small firm operating in a niche market?
3. What are the potential advantages/disadvantages for Hart Biologicals in pursuing a strategy based on acquisition, rather than organic growth?
4. How does Alby's proposed acquisition fit with Hart Biologicals serving a niche market?
5. How might the potential acquisition impact on the growth of a family firm such as Hart Biologicals?

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TEACHING NOTE

1 Summary of the case

Hart Biologicals is engaged in the research, development, manufacture, and marketing of a range of ‘in-vitro’ diagnostic products for use in the detection, prevention, and monitoring of a number of medical conditions related to haemostasis and platelet function. This case study focuses on entrepreneurial decision-making and the firm’s approach to business growth. The company has pursued a strategy of organic growth through increased sales but is now considering the acquisition of a firm that produces a complimentary product that would add to **its** existing range of products.

2 Teaching objectives and target audience

The key issue in this case study is whether the company should press ahead with a proposed acquisition. There is also a secondary issue regarding whether **it** should continue to produce **its** own-branded products or focus of the very lucrative ‘contract manufacturing’ side of the business. This case study will enable students to understand different approaches to entrepreneurial decision-making, performance and behaviour of a family firm. This case study is aimed at both undergraduate and postgraduate students studying strategy and entrepreneurship. There are four learning objectives:

- a) The case study provides a starting point for students to engage in evidence-informed discussions about how science-based entrepreneurs identify and evaluate opportunities.
- b) The case study also enables students to consider how science-based entrepreneurs pursue new opportunities.

- c) The case study allows students to engage in a broader discussion about approaches to entrepreneurial decision-making.
- d) The case challenges students to consider the impact of effectual decision-making on the performance and behaviour of a family firm.

3 Teaching approach and strategy

This case study can be used as the starting point for students to discuss different approaches to entrepreneurial decision-making, performance and behaviour of a family firm. It allows the application of classroom-based theory to be applied to a real-life situation and encourages active participation in the learning process. The main theoretical points to highlight when using the cases study centre round the concept of entrepreneurial decision-making. The case study places entrepreneurial decision-making within the context of science-based business and provides an opportunity for students to gain insights into how entrepreneurs identify, evaluate and pursue new opportunities. The case allows students to engage in a broader discussion about entrepreneurial approaches to strategy building and development in small firms.

Wherever possible, the classroom should be arranged with desks in a semicircle, or a similar layout, that allows students to face each other and work together in small groups. This layout will help to facilitate a direct exchange of views between students. Teaching this case begins by asking students to read and think about the case – either at the start of, or prior to class – depending on the length of the seminar/tutorial. A 5-10 minute introduction to the case by the lecturer might then be useful before beginning any discussion. The introduction should explain Alby's dilemma; whether to continue to pursue organic growth through increased sales, or to go ahead with the proposed acquisition of another firm. The lecturer might wish to present the potential alternatives to the proposed acquisition and the

challenges associated with each of choice, i.e. organic growth or acquisition. The goal of the case is not to select the correct choice for Hart Biologicals, but rather to understand the challenges inherent in entrepreneurial decision-making and how small business owners can mitigate any associated risks.

Once the introduction is complete, the lecturer might wish to break the class up into teams of three to five students, depending on student numbers. The teams should discuss and summarise their answers to each of the questions presented in the case study and choose one representative to present a summary of the team's answers to the class. The lecturer should work to move the discussion past a listing of challenges to an identification of the potential outcomes of the available choices. To conclude the session, the lecturer might consider asking students to report back – either in their groups or individually – to summarise what they consider to be the main learning outcomes of the session. Alternatively, the lecturer could ask them to take a few minutes to summarise their own thoughts about the main points raised in the case. It is also important to ask students to evaluate the usefulness of the case in their studies in order to help students evaluate their own learning as well as to help the lecturer to evaluate the usefulness of the case and make amendments where necessary.

4 Analysis

Students should be reassured that there are no right or wrong answers, but rather the case study provides a springboard for discussion about the main issues raised in the case. However, students are challenged to think about a real-life scenario where entrepreneurial decision-making by the main protagonist (Alby Pattison) can be analysed in detail. More specifically, students should consider the following point in their answers to the questions posed:

To what extent was Alby's decision to set up Hart Biologicals an example of effectual decision-making?

Students should be able to identify that Alby's decision to set up Hart Biologicals is an example of effectual decision-making. From the case material, students should be able to clearly recognise that Alby used effectual decision-making to identify an opportunity and acted on this by setting up Hart Biologicals as a one-product company. Students might also identify that, in recognising the potential of the contract manufacturing side of the business, Alby was again exercising an effectual approach to decision making.

Is organic growth a suitable strategy for Hart Biologicals, a science-based small firm operating in a niche market??

Students should be able to recognise that organic growth is a slower but more manageable form of growth for a small firm. However, Alby clearly has ambitions beyond this objective, and is actively exploring an acquisition opportunity. This is a good display of how effectual decision-making enables an entrepreneur to identify, evaluate and, pursue new potential growth opportunities. Student discussions here might include consideration of whether Hart Biologicals should focus on its 'own brand' products or continue with the very lucrative 'contract manufacturing' side of the business.

What are the potential advantages/disadvantages for Hart Biologicals in pursuing a strategy based on acquisition, rather than organic growth?

Students should be able to recognise that effectual decision-making is a flexible approach to decision-making that enables entrepreneurs to take advantage of potential growth opportunities as they arise. In addition to financial gain, students might also identify a number of other advantages including speed of growth, increased market power/share, new

resources and competencies, and reduced market entry barriers. The main disadvantages might include increased costs, lack of cultural fit, unrelated diversification, and distraction from its core business.

How does Alby's proposed acquisition fit with Hart Biologicals serving a niche market?

Students should be able to distinguish between niche and mass markets and suggest some reasons why Alby's proposed acquisition might be at variance with the firm's current strategy, or with serving a niche market. Equally, students might consider that the acquisition creates new opportunities to expand Hart's product range and to provide access to new markets, enabling it to serve a wider customer base. Students might want to explore the Hart Biologicals website (<https://www.hartbio.co.uk>) in order to find out more about the company.

How might the potential acquisition impact on the growth of a family firm like Hart Biologicals?

Hart Biologicals is a family-run firm and the case study asks students to consider the implications of the potential acquisition on the future performance and behaviour of a family firm. Students might, therefore, be encouraged to consider whether family firms are able to make better acquisitions than, for example, non-family firms, and why this might be.

5 Feedback

Please take time to reflect and consider how the case worked in different situations (for example, with different student groups, or on different modules). The case has been tested and has been an effective part of teaching entrepreneurship and strategy to a range of undergraduate and postgraduate programmes, including Business Management, International Business Management, Marketing, and Business and Entrepreneurship. More specifically, it has been used to support the teaching of small seminars groups on modules such as

‘International Strategic Challenges’, ‘Entrepreneurial Leadership’ and ‘International Business: Growth Strategies and Resourcing’. This case could also be used on other programmes of study such as Master’s degrees in enterprise, entrepreneurship and/or innovation, MBA courses, or with doctoral students. Potentially, the case is suitable for use as a written assessment or for an examination, role-playing, or for other purposes.

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