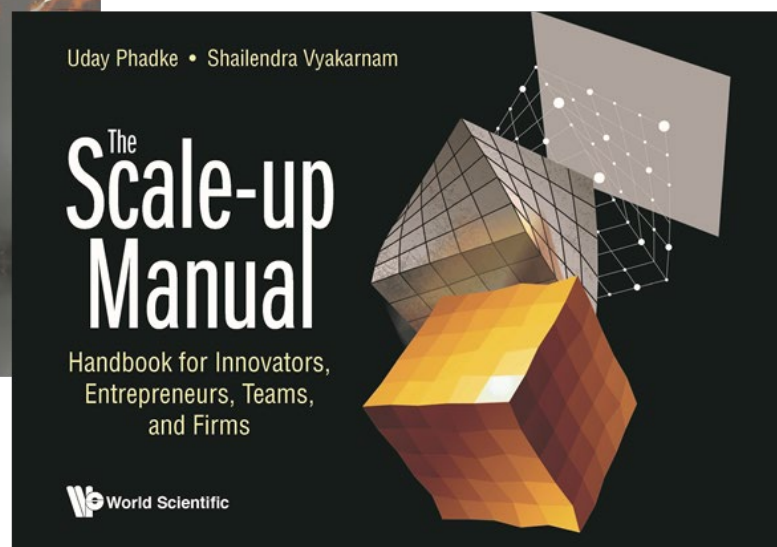
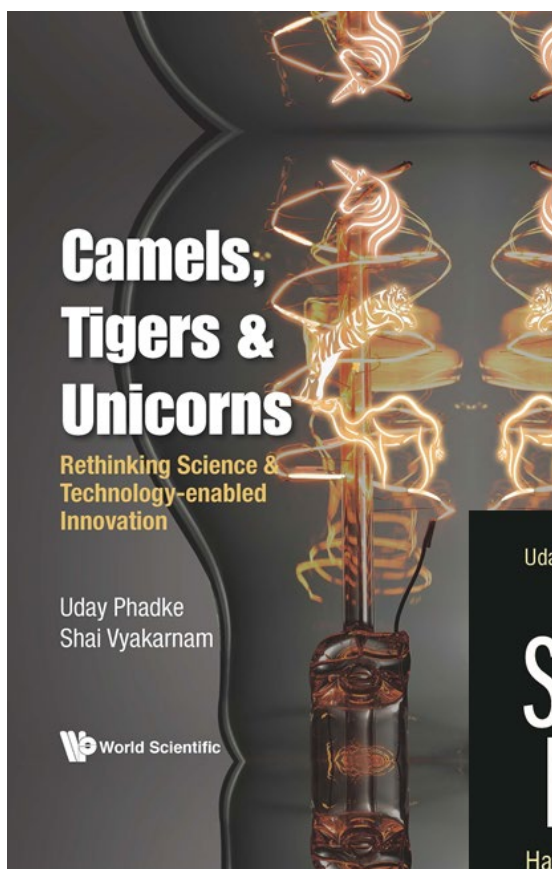


COMMERCIALISING INNOVATION: A SYSTEMATIC NEW APPROACH



Commercialising Innovation: A Systematic New Approach

1. Introduction

Innovation holds the key to sustainable commercial growth on a global scale. Unfortunately, there is no clear understanding of how such innovation is transformed into commercial and social value. Success depends on the ability of the enterprise to integrate a wide range of economic, technological, commercial, social and cultural factors in the commercialisation process.

The fact is that the early stages of growth take a lot longer than most conventional wisdom reported in business literature. Typically, half-way through the product journey, cumulative customer penetration will only have reached about 10% of the maximum number of customers. Traditional views on innovation claim about 50%, which leaves companies in limbo of how to motivate teams, attract investments and lead the prolonged journey of scale up and return on investment.

Phadke & Vyakarnam ^{1,2} set out a new structured approach to this challenge. They demonstrate that the commercialisation journey is interrupted by three discontinuities or chasms where cumulative customer growth stalls. Their *Triple Chasm Model* illustrates that the early part of this journey takes much longer than previously thought, which confirms why scaling up is so hard to do.

This white paper provides an overview of this radical approach and its key benefits:

- Established corporations can use it to tackle their innovation challenges in a *structured way*, rather than embracing generalised approaches exhorting them to harness entrepreneurial thinking, more innovative leadership and increasing R&D spend
- Scale-up firms can use it to understand their commercialisation journeys and allocate the right resources at the right time to increase the chances of success
- Public innovation agencies, technology transfer firms, incubators and accelerators can use it to design and execute the best intervention strategies

2. The approach in brief

Phadke & Vyakarnam ^{1,2} combine the Triple Chasm Model with a *modified technology readiness level* and a corresponding *commercialisation readiness level* to obtain a robust measure of the maturity of any product or service. This plays a critical role in addressing any commercialisation challenge. The third critical element of their approach are the twelve drivers – *the meso-economic vectors* – which they define as ‘shaping’ the commercialisation trajectory.

All these elements are brought together in the *commercialisation canvas*, which supports decision-making and time allocation during the commercialisation journey.

3. The commercialisation journey and the triple chasm model

The 3 chasms on this journey, shown in Figure 1, describe the following key transitions:

- Chasm I: From product or service concept to working prototype with a ‘Proto-customer’
- Chasm II: From an early product or service to a fully functional product or service with a commercially sustainable business model demonstrated with Charter customers
- Chasm III: From early Charter customers to Mainstream customers as the firm scales significantly

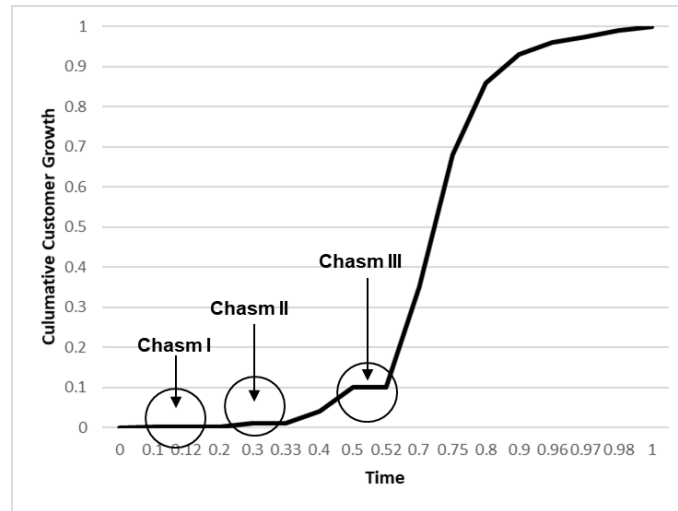


Figure 1: The Triple Chasm Model

4. *modified* Technology Readiness Level and Commercialisation Readiness Level

Through their research, Phadke & Vyakarnam have defined a *modified technology readiness level* (mTRL) and a corresponding *commercialisation readiness level* (CRL). Combining this with the Triple Chasm Model provides a robust measure of the maturity of any product or service. This maturity assessment, shown in Figure 2, plays a critical role in addressing any commercialisation challenge in terms of the starting point, the desired endpoint and the gap which needs to be addressed.

mTRL	CRL	Readiness Level from exploitation perspective
0	0	Research in progress
1	1	Application concept defined from validated research
2	2	Application concept refined
3	3	Application concept validated
Chasm I		
4	4	Product or Service prototype developed
5	5	Product or Service prototype validated with <i>Proto-customers</i>
6	6	Product or Service prototype refined for commercial deployment
Chasm II		
7	7	Product or Service developed with business model for <i>Charter Customers</i>
8	8	Product or Service validated with sustainable business model
9	9	Product or Service & business model refined for <i>Mainstream Customers</i>
Chasm III		
		Full Scale Deployment with <i>Mainstream Customers</i>
Adapted from NASA TRL Approach		

Figure 2: Maturity Assessment based on Triple Chasm Model & Technology/Commercialisation Readiness Levels

5. The *meso-economic* vectors

Twelve drivers – the *meso-economic* vectors – ‘shape’ the commercialisation trajectory, as shown in Figure 3.

Four ‘external’ vectors are defined as shaping the environment. Six ‘internal’ vectors describe the drivers under the control of firms and individuals, which can be used to shape the commercialisation trajectory. Two ‘composite’ vectors describe the trade-offs between the internal and external vectors, judgements typically made by leaders and managers.

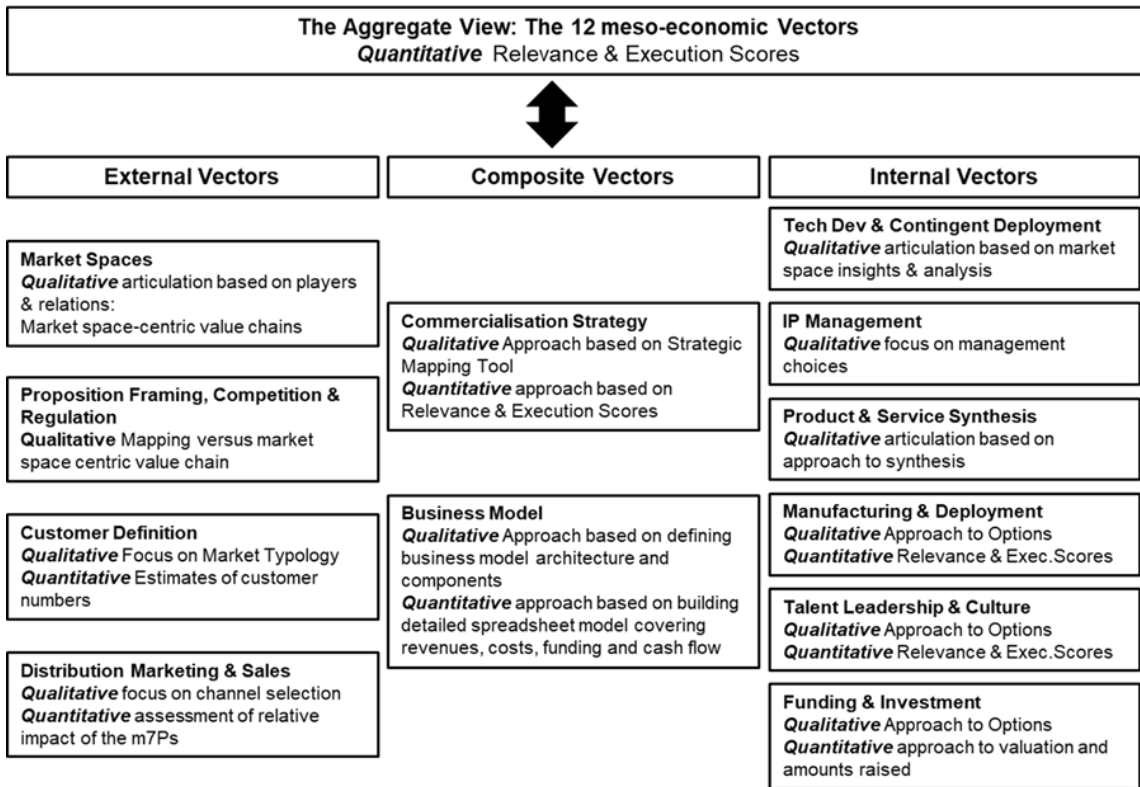


Figure 3: The three overall vector groups and the 12 vectors

6. Commercialisation canvas

The Commercialisation Journey		Research	Idea to Concept	Chasm I	Prototype	Chasm II	Viable Product	Chasm III	Expansion		
Market Spaces	Defining Market Spaces										
	Market space-centric value chains										
	Characterising Market Spaces										
Proposition Framing	Estimating T _{max}										
	Proposition Framing										
	Competition Regulation										
Customer Definition	Differentiation										
	Partners & Suppliers										
	Customer Typologies										
Distribution, Marketing & Sales	Consumers										
	Affinity & Knowledge-centric Users										
	Governments										
Commercialisation Strategy	Businesses										
	C-max & Market Sizing										
	Generic Challenges										
Business Models	Overall priorities										
	The m7Ps Model										
	Channels to Market										
Technology Development & Contingent Deployment	Approaches to Strategy										
	Vector-based approach										
	Priorities vs Maturity										
Product & Service Definition and Synthesis	Business Models Deconstructed										
	Potential Revenue Sources										
	Metrics										
Manufacturing & Deployment	Base vs Application Technologies										
	Technology Platforms										
	Application & Tools										
IP Management	Products & Services										
	Managing Technology Deployment										
	Approaches to Product Development										
Talent, Leadership & Culture	Voice of the Customer Approaches										
	Technology Mapping Approaches										
	Approaches based on Synthesis										
Funding & Investment	Proposition decomposition										
	Components										
	Supply Chains										
mTRL/CRL	Processes										
	Deployment										
	Integrated Operations										
Commercialisation Readiness	Overall priorities										
	Registered Rights										
	Un-registered rights										
Commercialisation Readiness	Open Rights										
	Talent										
	Teams										
Commercialisation Readiness	Organisational Structure										
	Leadership										
	Culture										
Commercialisation Readiness	Sources of Funding										
	Funding vs Maturity										
	Customer Funding										
Firm Valuation											
Commercialisation Readiness		0	1	2	3	4	5	6	7	8	9

Figure 4: Typical Commercialisation Canvas

By integrating the maturity descriptors of the commercialisation journey with the meso-economic vectors on the commercialisation canvas, it is possible to map the trajectory of any product or single-product firm, as illustrated for an example firm in Figure 4. Such insight can provide a powerful basis for leaders to make decisions about the allocation of key resources in a time-critical manner.

7. Actors on the commercialisation journey and their needs

The actors shown in Figure 5 can use the commercialisation canvas to understand their priorities and needs

- **Policy makers and agencies** need to understand how to provide the right environment and resources to enable this sustainable growth.
- **Established major firms** need to understand and profile existing products and services, evaluate potential new products and services, and develop or acquire new products and services in a structured way.
- **Mature firms** need to understand when and how to replenish their product and service portfolios and maintain their competitiveness.
- **Growth firms** need to understand and tackle the three different chasms as they grow
- **Early stage firms** need to understand the drivers appropriate for their stage of growth and how to tackle them.
- **Early stage entrepreneurs** need to understand the journey they are embarking on and the key challenges they face, including when to formally establish a firm as a vehicle for the journey.
- **Research-centric innovators** need to understand the range and potential impact of their innovations, the complexity of the commercialisation journey and the need for commercial expertise.

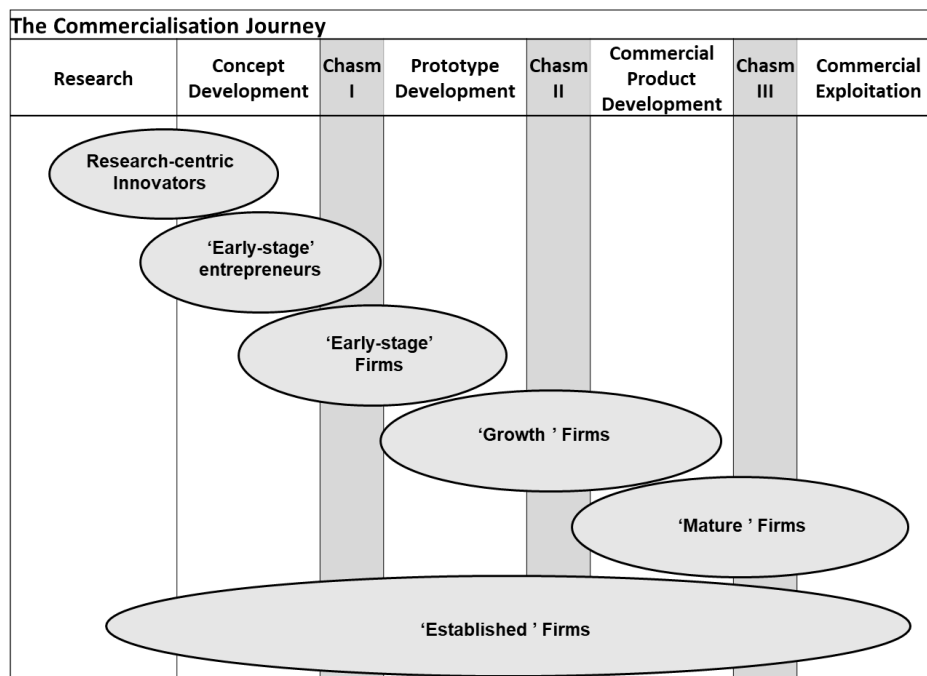


Figure 5: Actors impacted by chasms on the journey

8. Shaping the commercialisation journey

A number of approaches have been proposed over the last three decades to guide the commercialisation process, based on the application of *specific resources* (for example core competences) or *optimising the application* of resources (for example 'lean' methods). What distinguishes this approach is a data-driven understanding, based on a structured examination of the experience of hundreds of companies, and a wider (and growing) database describing the behaviour of several thousand companies. The new approach depends on understanding the **full set of drivers and their relevance**, based on the maturity of the proposition.

Phadke & Vyakarnam's approach demonstrates how progression along the commercialisation journey depends on successfully crossing the three chasms, as shown in Figure 6. Leaders and managers need to understand the vector profiles around these chasms, in particular at Chasm II.

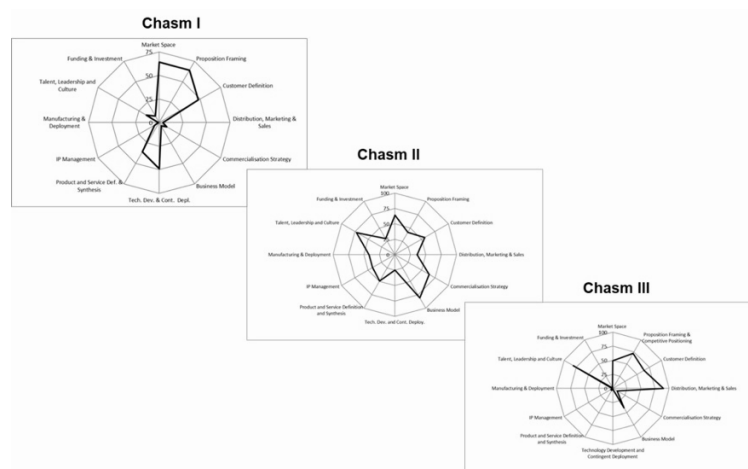


Figure 6: Changes in strategic priorities across Chasms I, II and III

9. Learn more

Phadke & Vyakarnam have published two books which provide detailed descriptions of the complete concept and tools for implementation (see references). Business cases that demonstrate the approach in action are available on request.

Dr. Phadke's primary focus is on the creation of commercial value enabled by science and technology-enabled innovation. He works actively with: large corporations on M&A and the organic creation of new products & services; with scale-up firms; and with academic and translation institutes on accelerating commercial growth.

Based in Cambridge, UK, Cartezia specialises in the commercialisation of science and technology-enabled innovation. To find out more visit www.cartezia.com. To ask about a presentation, contact Uday Phadke at uday.phadke@cartezia.com, tel. +44 1223 421445.

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