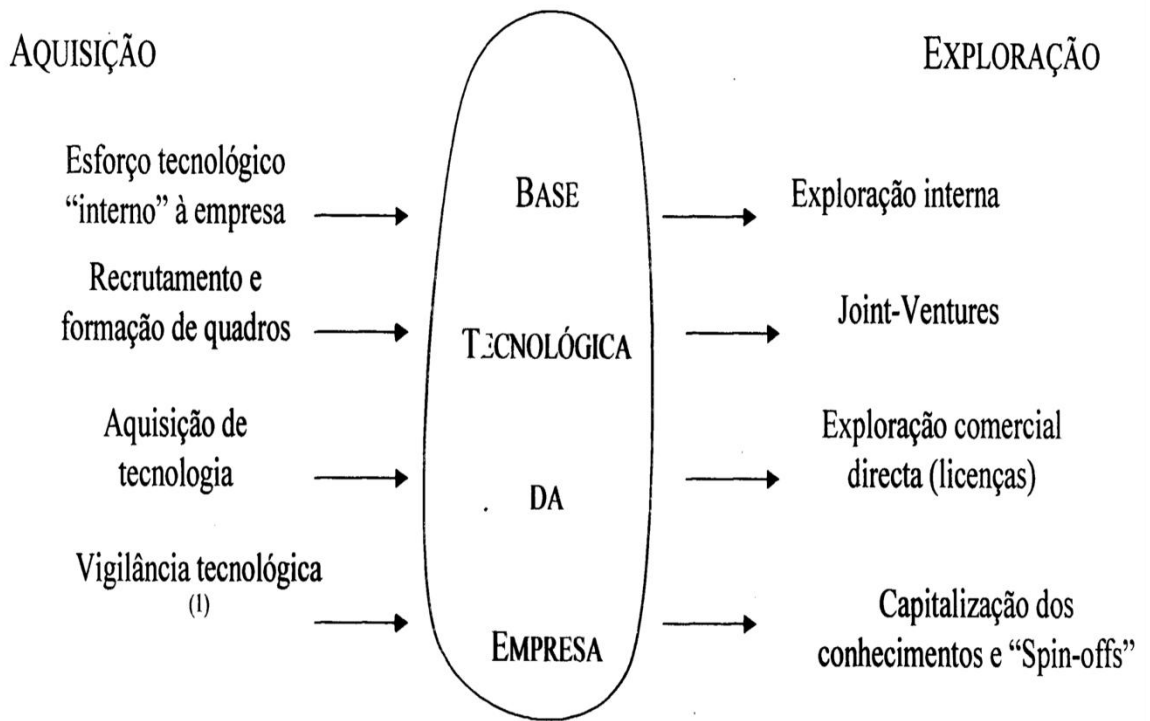


CAPÍTULO 3
INOVAÇÃO E GESTÃO
NA EMPRESA

Ver o 2010 Global
innovation 1000 da
Booz, Allen &
Hamilton

3.1. A EMPRESA COMO ESPAÇO DE PROCESSAMENTO DE SABERES



(1) Inclui formas legais e ilegais de obtenção de conhecimentos tecnológicos do exterior, sem haver compra directa à entidade que os originou

Fonte: Adaptado de Ove Granstrand e Soren Sjolander, *Managing Innovation in Multi-Technology Corporations*, *Research Policy*, Vol. 19, 1990)

Figura 2 – Inter-acção Aquisição/Exploração Tecnologia

CARACTERÍSTICAS BÁSICAS DA ACTIVIDADE INOVADORA DAS EMPRESAS

1. COLABORAÇÃO E INTERACÇÃO
ENTRE DIFERENTES GRUPOS
FUNCIONAIS E PROFISSIONAIS
2. INCERTEZA
3. CARÁCTER CUMULATIVO
4. DIFERENCIAÇÃO DOS CAMPOS
TECNOLÓGICOS

Fonte: Pavitt (1989)

CARATERÍSTICAS DAS ACTIVIDADES INOVADORAS

- THE INTEGRAL NATURE OF INNOVATION WORK
- THE SITUATED NATURE OF INNOVATIVE PROBLEM SETTING AND SOLVING
- THE EMERGENT NATURE OF STANDARDS THAT GUIDE THE WORK

Table 3 **Contrasting Images of Differentiating and Integrating the Work of Sustained Product Innovation**

Innovative Capability	Shared Image of How Value Is Created by Organization as a Whole	Shared Image of How Value Creation Is Differentiated	Shared Image of How Value Creation Is Integrated
<p>More Fully Innovative Organizations innovation is part of strategy as well as of daily operations; self reports, published corroboration</p>	<p><i>value is created through practice: active working relations with customers over long term; using firm's unique skills to anticipate and solve customer' problems</i></p> <p><i>Nature of Organizational Identity: A Practice; what we can do</i></p>	<p><i>value creation differentiated into four distinct problem areas, organized as communities of practice, lateral slices of whole practice, highlights importance of all four problems; autonomous communities of practice take charge of each problem area, sets and solves problems in context</i></p>	<p><i>value creation is integrated by acting out standards, working toward standards: continually enact standards of practice across, within communities as practices evolve; visible standards for action articulated by senior managers and enacted, reenacted in practice; plus extensive mapping, remapping of connecting processes</i></p>
<p>Partially, or Incrementally Innovative Organizations vastly improved NPD processes, reaching for more systematic innovation strategy; self reports, corroborated by other mgrs, experts</p>	<p><i>Value is created by managing a specific product category or kind of business: focus shifts from internal functioning to specific customers</i></p> <p><i>Nature of Organizational Identity: A Status in a product category; active, concrete; based on what we do</i></p>	<p><i>Value creation differentiated into product development problems, vs. all else; PD organized as a community of practice; firms are recognizing that other problems are also unique, beginning to organize them explicitly; business and strategic work still focused on optimizing outputs in abstract</i></p>	<p><i>Value creation integrated by enacting, re-enacting specific market and product category; product standards are somewhat rigid; common standards for action developing</i></p>
<p>Noninnovative Organizations firms do not innovate readily or easily, according to self-reports, corroborated by other experts</p>	<p><i>value is created by maintaining status of current system; keeping it functioning at optimum: system is like a machine, job is to keep machine running;</i></p> <p><i>Nature of Organizational Identity: A Status; passive, static; based on what we are</i></p>	<p><i>Value creation differentiated into separate steps, in effect into solutions that already exist; organized as separate units; each applies own specialty solution to given problem; problem setting separated from problem solving; no distinction of different kinds of problems in innovation management</i></p>	<p><i>Value creation integrated by standardizing action; by matching activities to system; problem translated by top mgt into rules for optimizing current system;</i></p> <p><i>all innovation decisions made by top mgt to assure that they fit with current system; cannot make sense of new activities</i></p>

3.2. BASE DE CONHECIMENTOS


BASE TECNOLÓGICA DA EMPRESA

“ACTIVO DE COMPETÊNCIAS TECNOLÓGICAS QUE A EMPRESA POSSUI”


Granstrand e Sjollander (1990)

CONJUNTO DE RECURSOS E DE CAPACIDADES TECNOLÓGICAS QUE PENETRAM TODO O TECIDO EMPRESARIAL E QUE SÃO APLICADOS (OU SUSCEPTÍVEIS DE SER APLICADOS) NA CONCEPÇÃO, FABRICO E COMERCIALIZAÇÃO DE PRODUTOS E/OU NA PRESTAÇÃO DE SERVIÇOS.

BASE DE CONHECIMENTOS (ADLER & SCHENHAR)

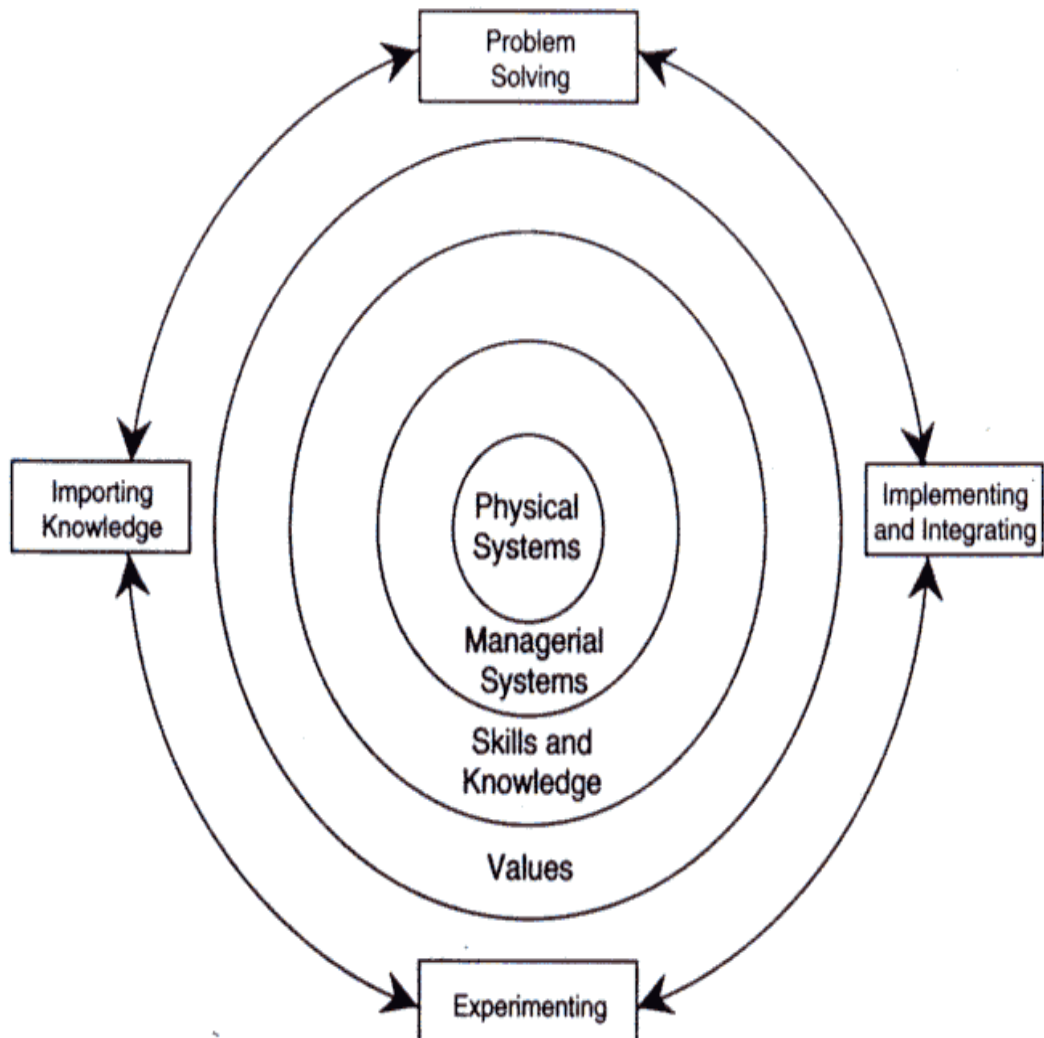


ELEMENTOS TANGÍVEIS
ELEMENTOS INTANGÍVEIS
INDIVÍDUOS E EQUIPAS



ACTIVOS TECNOLÓGICOS
ACTIVOS ORGANIZACIONAIS
ACTIVOS EXTERNOS
PROJECTOS

Figure 1-3 Dimensions of a Core Capability



Fonte: Leonard-Barton (1995)



Fonte: Simões (2002)

Figura 6.1: Uma visão simplificada das competências da empresa

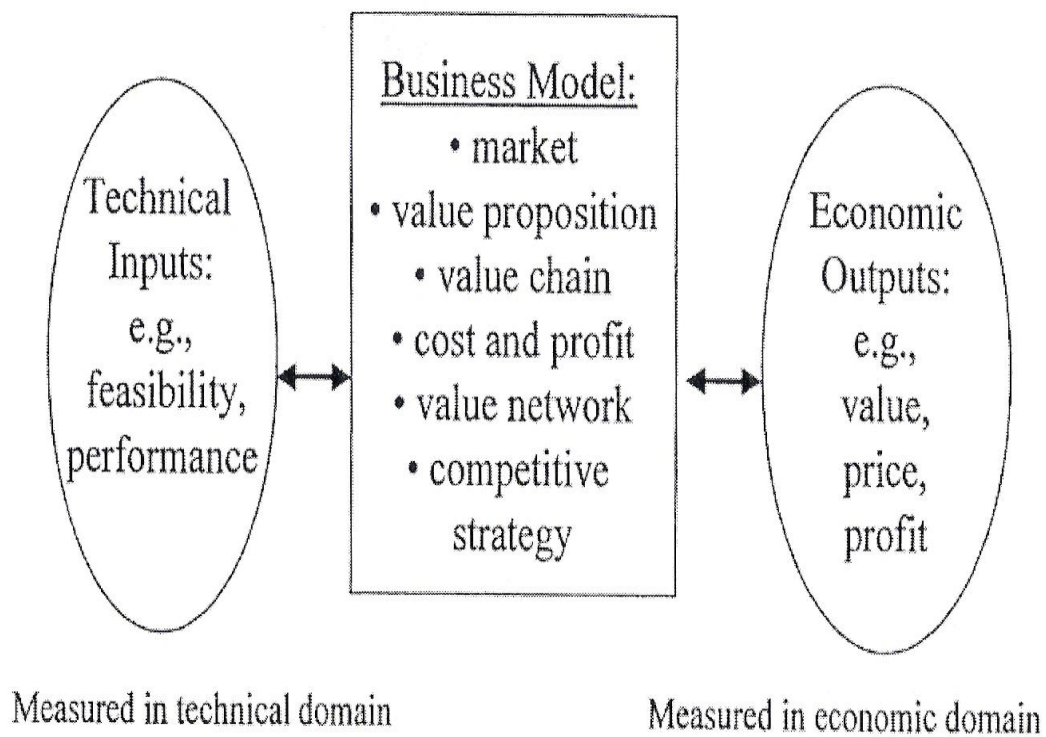
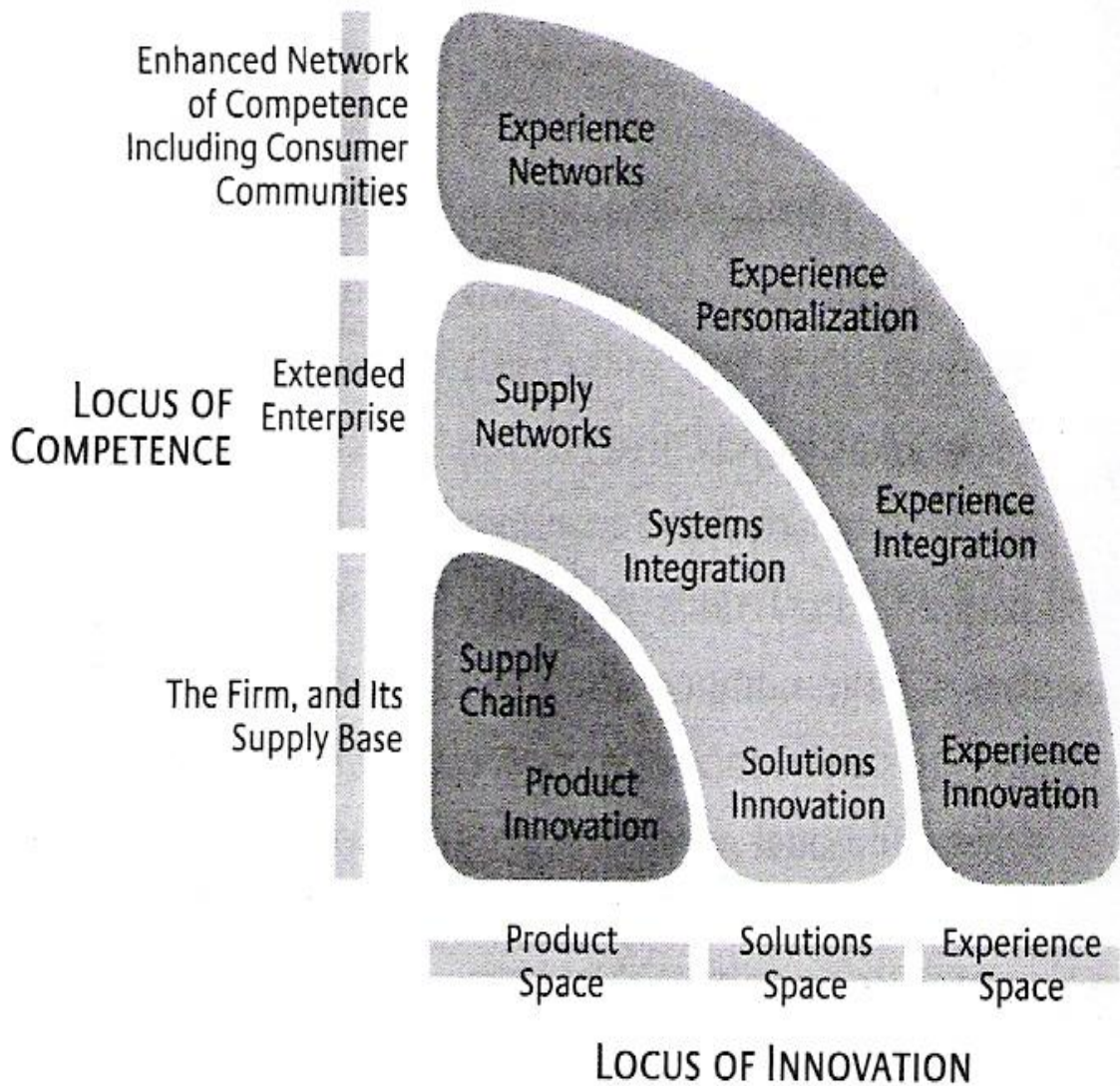


Figure 1 The business model mediates between the technical and economic domains.

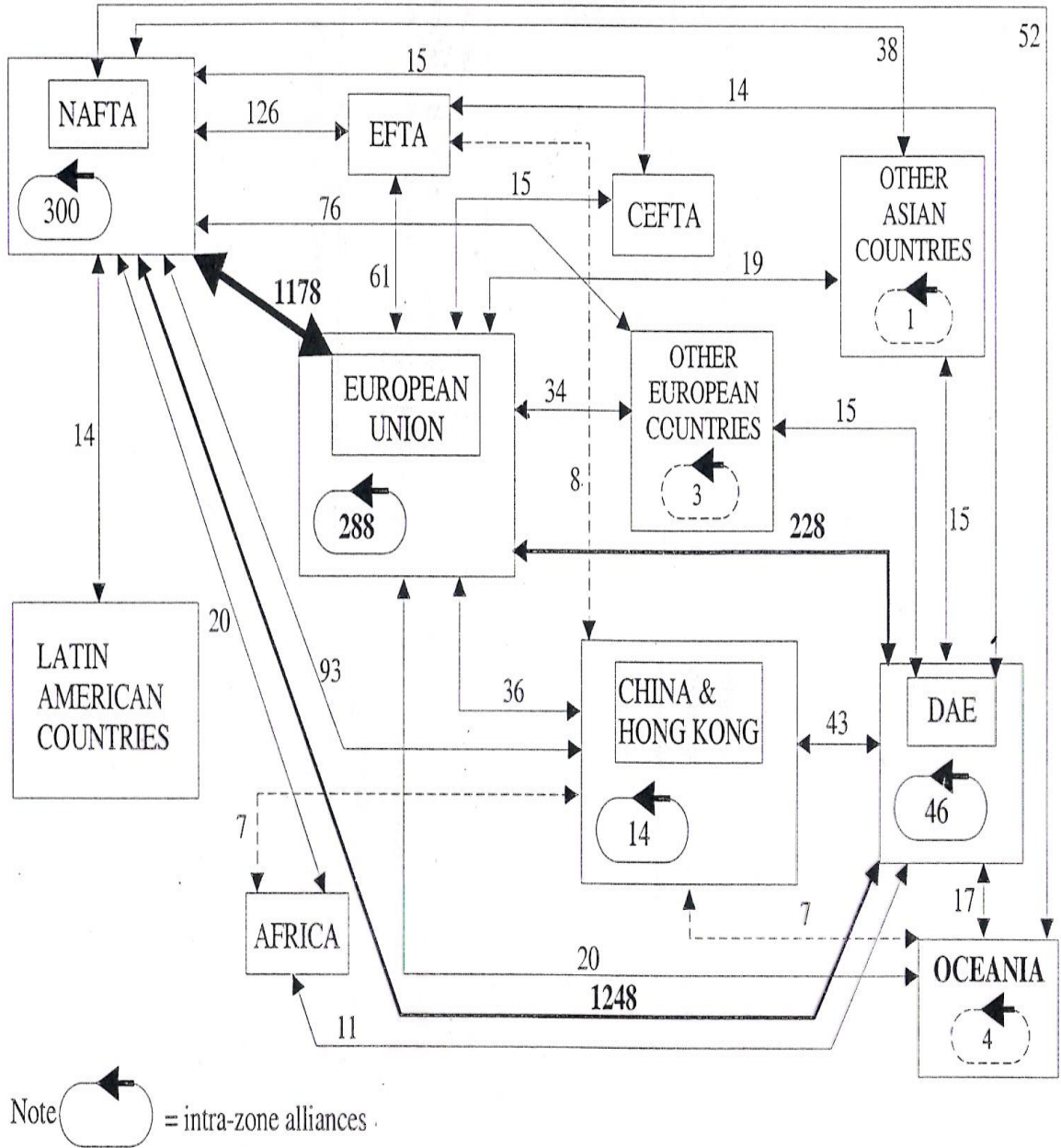


Fonte: Prahalad e Ramaswami (2003)

3.3.

RELACIONAMENTOS EXTERNOS

Figure A-1: International Technology Alliances Between and Within Trading Blocs (1984-95)



Source: Commission of the European Communities (1997)

Table 4.14 Frequency and sources of innovation, by firm size (France, 1993/94)

Firm size employ- ment	Innovating firms (%)	Sources of innovation						Total
		Own R&D	Informal R&D	Outside R&D	Licences	Machine suppliers	Material suppliers	
20-49	55	16	25	10	5	26	18	100
50-99	66	19	25	10	5	23	16	100
100-499	70	21	25	11	5	22	16	100
200-499	80	24	24	12	6	20	15	100
500-1999	86	26	23	13	6	19	14	100
2000+	96	25	21	14	6	18	14	100

Sources: 'L'innovation technologique', Min. de l'Industrie, 1994; Kaminski, P. (1994) 'Le cas particulier de la micro-entreprise', INSEE.

Table 4.10 The effectiveness of methods of learning about competitors' innovations in large US firms

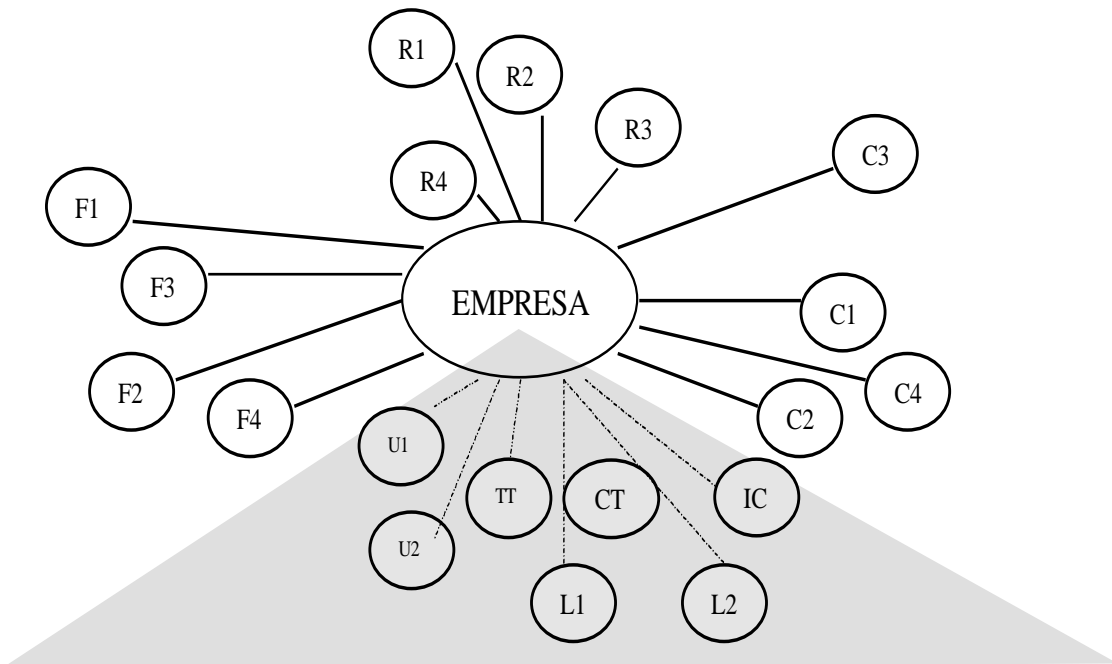
Method of learning	Overall sample means*	
	Processes	Products
Independent R&D	4.76	5.00
Reverse engineering	4.07	4.83
Licensing	4.58	4.62
Hiring employees from innovating firm	4.02	4.08
Publications or open technical meetings	4.07	4.07
Patent disclosures	3.88	4.01
Consultations with employees of the innovating firm	3.64	3.64

*Range: 1 = not at all effective; 7 = very effective.

Source: Levin, R., Klevorick, A., Nelson, R. and Winter, S. (1987) 'Appropriating the returns from industrial research and development', *Brookings Papers on Economic Activity*, 3, 783-820. Reproduced by permission of The Brookings Institution.

RELATIONSHIPS AND KNOWLEDGE BASE

- THE KNOWLEDGE BASE OF THE FIRM AS A KEY INSTRUMENT FOR GENERATING AND SUSTAINING SIGNIFICANT RELATIONSHIPS
- KNOWLEDGE BASE AND SPATIAL SCOPE: FROM CURRENT INTER-ACTION TO COMMITTED NETWORKING
- KNOWLEDGE BASE AND LOCATION: AMBIVALENT RELATIONSHIPS



Legenda: F - fornecedores; R - rivais (concorrentes); C - clientes;
 U - Universidades; L - licenciadores;
 TT - organismo de transferência de tecnologia; CT - centro
 tecnológico; IC - centro de investigação.
 As linhas cheias e tracejadas indicam a intensidade das relações

Amplitude das Redes de Relacionamento Externo

Fonte: Simões (1997)

3.4. FORMAS DE APROPRIAÇÃO DOS AVANÇOS TECNOLÓGICOS

APROPRIAÇÃO DOS CONHECIMENTOS

PRINCIPAIS FORMAS DE APROPRIAÇÃO

PATENTES

SEGREDO

AVANÇO TECNOLÓGICO (LEAD TIME)

AVANÇO NA CURVA DE APRENDIZAGEM

VANTAGENS COMERCIALIZAÇÃO E SERVIÇO

	PROCESSO	PRODUTO
PAPEL	<i>CA</i>	<i>CS</i>
FARMACÊUTICA	<i>P</i>	<i>P</i>
COMPUTADORES	<i>LT</i>	<i>LT</i>
EQUIP. TELECOMUNIC.	<i>LT</i>	<i>CS</i>
SEMICONDUCTORES	<i>CA</i>	<i>LT</i>
COMPON. AUTOMÓVEIS	<i>CA</i>	<i>LT</i>
INSTRUM. MÉDICA	<i>LT</i>	<i>CS</i>
QUÍMICA ORGÂNICA	<i>S</i>	<i>P</i>

FONTE: WINTER (1987)

Table 4.13 Inter-industry differences in the effectiveness of patent protection, according to large European and US firms*

Industry	Products		Processes	
	Europe	USA	Europe	USA
Drugs	4.8	4.6	4.3	3.5
Plastic materials	4.8	4.6	3.4	3.3
Cosmetics	4.6	2.9	3.9	2.1
Plastic products	3.9	3.5	2.9	2.3
Motor vehicle parts	3.9	3.2	3.0	2.6
Medical instruments	3.8	3.4	2.1	2.3
Semiconductors	3.8	3.2	3.7	2.3
Aircraft and parts	3.8	2.7	2.8	2.2
Communications equipment	3.6	2.6	2.4	2.2
Steel mill products	3.5	3.6	3.5	2.5
Measuring devices	3.3	2.8	2.2	2.6
Petroleum refining	3.1	3.1	3.6	3.5
Pulp and paper	2.6	2.4	3.1	1.9

* Range: 1 = not at all effective; 5 = very effective.

Note: Some industries omitted because of lack of Europe–USA comparability.

Sources: Arundel *et al.* 1995 and Levin *et al.* (1987).³³ Reproduced by permission of Anthony Arundel.

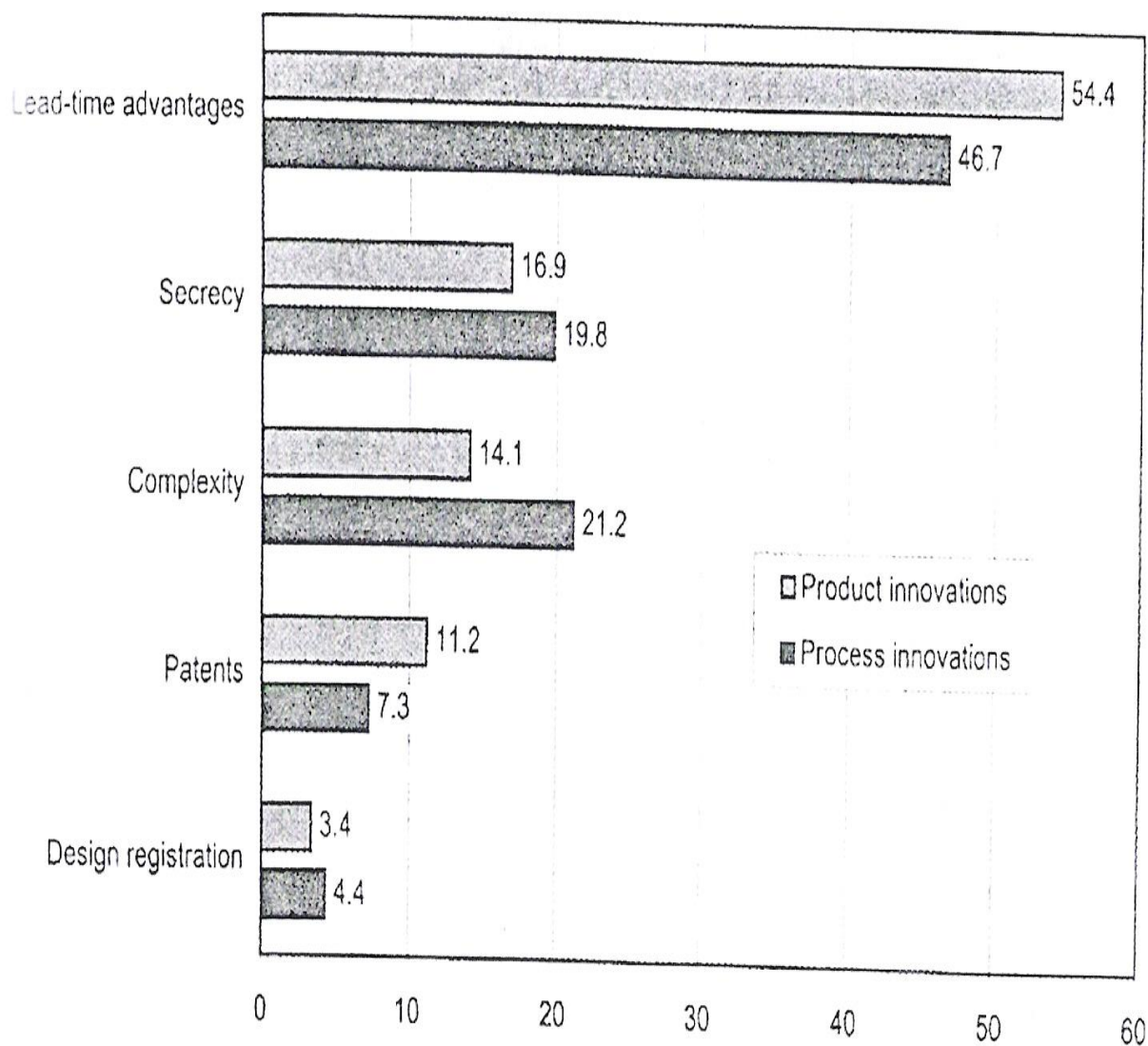


Fig. 1. Percentage of 2849 R&D-performing firms that give their highest rating to each appropriation method.

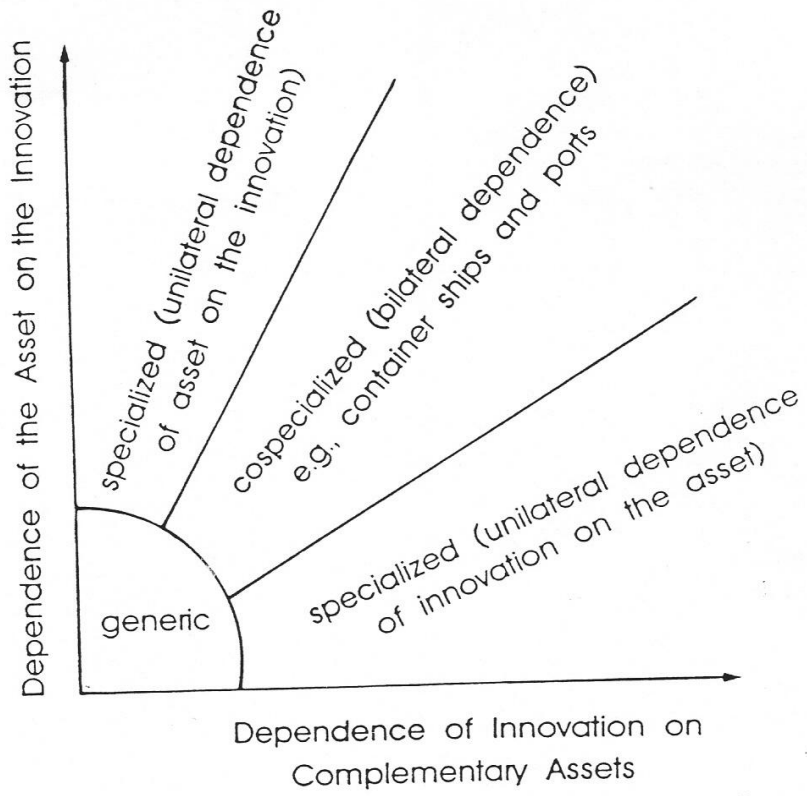


FIGURE 4 Complementary assets: generic, specialized, and cospecialized.

Fonte: Teece (1986)

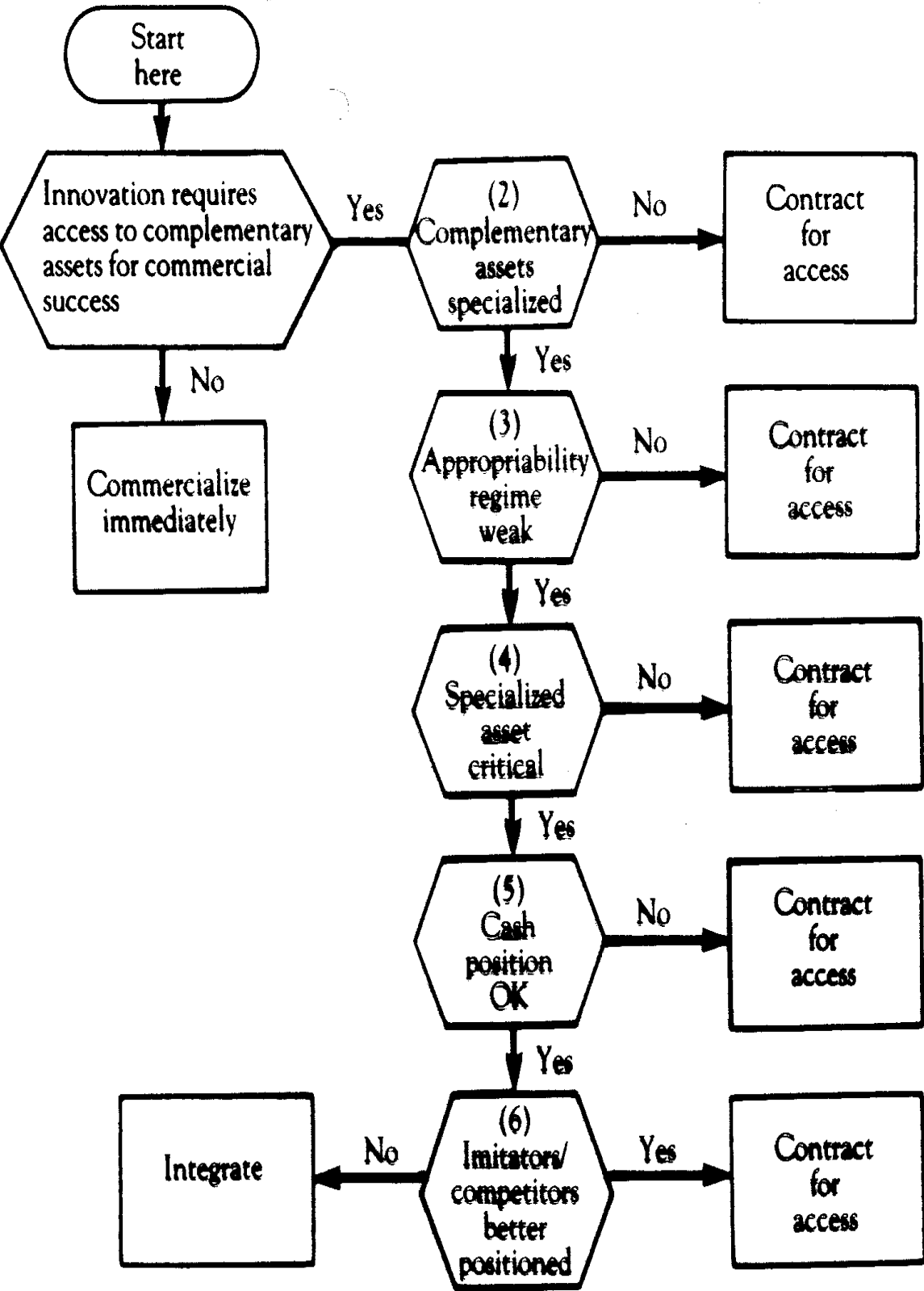


Figure 9-10. Flow Chart for Integration versus Contract Design.

Key



		Weak legal/technical appropriability	
		Strong legal/technical appropriability	Innovator poorly positioned versus imitators with respect to commissioning complementary assets
Innovators and imitators advantageously positioned vis-à-vis independent owners of complementary assets	(1) <i>Contract</i>	(2) <i>Contract</i>	(3) <i>Contract</i>
	Innovator will win	Innovator should win	Innovator or imitator will win; asset owners won't benefit
Innovators and imitators disadvantageously positioned vis-à-vis independent owners of complementary assets	(4) <i>Contract if can do so on competitive terms; integrate if necessary</i>	(5) <i>Integrate</i>	(6) <i>Contract (to limit exposure)</i>
	Innovator should win; may have to share profits with asset holders	Innovator should win	Innovator will probably lose to imitators and/or asset holders

Figure 9-11. Contract and Integration Strategies and Outcomes for Innovators: Specialized Asset Case.

Fonte: Teece (1988)

VALORIZAÇÃO COMERCIAL

- PRODUTOS
- SERVIÇOS
- TECNOLOGIAS

⇒ CRESCENTE SEPARAÇÃO
ENTRE CONCEPÇÃO E
FABRICO

⇒ O PAPEL DOS D.P.I.

⇒ ALIANÇAS E ESPECIALIZAÇÃO

⇒ O DESENVOLVIMENTO DO
MERCADO DA TECNOLOGIA

Eixo de Utilização Estratégica	Espaço de Aplicação	Modos de Regulação⁽¹⁾	Relevância da Cooperação
Proteger para Explorar	Mercado dos Produtos	Hierarquia	Nula (em princípio) ⁽²⁾
Proteger para Comercializar	Mercado da Tecnologia	Contratos de Licença	Variável
Proteger para Trocar	Oligopólios Tecnológicos	Licenças Cruzadas	Limitada
Proteger para Cooperar	Mercado da Inovação	Acordos de Base Tecnológica	Elevada

(1) Agradeço a sugestão desta dimensão ao Sandro Mendonça. Utilizo o termo modos de regulação como tradução da expressão inglesa "forms of governance"

(2) Relativamente à exploração das patentes em causa. Não se exclui a possibilidade de relações cooperativas em outras áreas, designadamente em termos do fabrico de certos componentes ou da distribuição de produtos.

Quadro 1 – Eixos de Utilização Estratégica das Patentes

Fonte: Simões (2002)

3.5. PARADOXOS NA GESTÃO DA INOVAÇÃO

PARADOXOS NA GESTÃO DA INOVAÇÃO

- o EXPLOITING *VERSUS* EXPLORING
- o ORTODOXIA *VERSUS* HETERODOXIA
- o ESPECIALISTAS *VERSUS* GENERALISTAS
- o GERAÇÃO INTERNA *VERSUS* AQUISIÇÃO DE CONHECIMENTOS NO EXTERIOR

OS CINCO MITOS DA INOVAÇÃO

- O 'Momento Eureka' *versus* Empenhamiento Continuado na Inovação
- As Redes Sociais geram Inovação *versus* Focalização de Objectivos na Utilização
- A Inovação Aberta (IA) é o Futuro *versus* Custos da IA
- Inovar exige recompensas monetárias *versus* Existem outros tipos de Recompensas
- A Inovação deve ser *Bottom-Up* *versus* Análise dos Desafios defrontados pela empres

A framework for rethinking management

