Bandwagon Effects in High-Technology Industries

Jeffrey H. Rohlfs

The MIT Press Cambridge, Massachusetts London, England

Contents

Ack	nowle	dgments	xi
For	eword		xiii
I	Intro	duction	1
1	The	High-Technology Bandwagon	3
2	A Bandwagon Tour		7
į	2.1	•	8
П	Band	wagons: How They Work	13
3	Bandwagon Demand		19
	3.1	Equilibrium User Sets	20
	3.2	Demand as a Function of Price	24
	3.3	Metcalfe's Law	29
	3.4	Dynamics of Complementary Bandwagon Effects	30
4	Bandwagon Supply		33
	4.1	Monopoly versus Competition	33
	4.2	Interlinking	34
	4.3	Solving the Start-Up Problem	35
	4.4	Incentives of Suppliers to Interlink	45
	4.5	Supply Coordination with Complementary	
		Bandwagon Products	47
	4.6	Technical Standards	48
	4.7	Proprietor Services versus Customer Equipment	50
	4.8	Mature Services	51
	4.9	Predatory Pricing	53

5	Summary of Results of Bandwagon Theory				55
	5.1	The Cheat Sheet			55
m	Case S	Studies			59
6	Fax				61
	6.1	Lessons from Case Study			67
7	Early	Telephone			69
	7.1	Pricing of Exchange Service			69
	7.2	Interlinking			79
	7.3	Lessons from Case Study			80
8	Pictur	rephone			83
	8.1	Picturephone as an Intercom Service			87
	8.2	Constructing a Self-Sufficient User Set			88
	8.3	Actual Outcome	-	8	9
	8.4	Lessons from Case Study			89
9	Compact-Disc Players				91
	9.1	Technological Standard			92
	9.2	CDs Not Available			95
	9.3	Small Libraries of CDs			96
	9.4	Subsequent Developments			98
	9.5	Other Digital Players of Recorded Music			99
	9.6	Lessons from Case Study			104
10	VCRs				105
	10.1	Early Developments			105
	10.2	Early VCR Use			106
	10.3	Beta versus VHS			107
	10.4	The Bandwagon			109
	10.5	The Hollywood Assault			111
	10.6	The Videocassette Business			112
	10.7	Videodi.sc Players			113
	10.8	Lessons from Case Study			115
11	Personal Computers				117
	11.1	Early Application Software			119
	11.2	The Rise of the IBM PC			119

Contents	ix
----------	----

	11.3	The Decline of the IBM PC	111
	11.4	The Role of Apple	124
	11.5	The Rise of Intel and Microsoft	127
	11.6	Microsoft's Pricing	129
	11.7	Recent Applications Software	131
	11.8	Linux	132
	11.9	Java	133
	11.10	The Role of Misjudgments	134
	11.11	Lessons from Case Study	135
12	Television		137
	121	The Emergence of Television	137
	12.2	Color Television	143
	123	High-Definition Television	148
	124	Lessons from Case Study	164
13	The I	nternet	167
	131	Size and Growth of the Internet	168
	13,.2	Telecommunications Technology	172
	133	Evolution of the Computer Industry	176
	134	Telecommunications Prices	177
	135	The Development of ARPANET	179
	13.6	Other Packet-Switched Networks	181
	13.7	NSFNET	188
	13 .8	The Internet after NSFNET	189
	13.9	Externalities and Transactions Costs	189
	13.10	Current Internet Usage	190
	13.11	A Final Reflection	191
	13.12	Lessons from Case Study	191
rv	Concl	usions	193
14	Summary of Results		195
14	14.1	Start-Up Problem	197
	14.2	Vertical Integration	197
	14.3	Bandwagon Markets without Interli	198
	14.4	Agreeing to a Technical Standard	199
	14.5	Government Intervention	201

x Contents

15 Final Remarks	203
Mathematical Appendix	205
Notes	, 223
Glossary of Economics Concepts	235
Dictionary of Abbreviations and Acronyms	239
Bibliography	241
Index	247