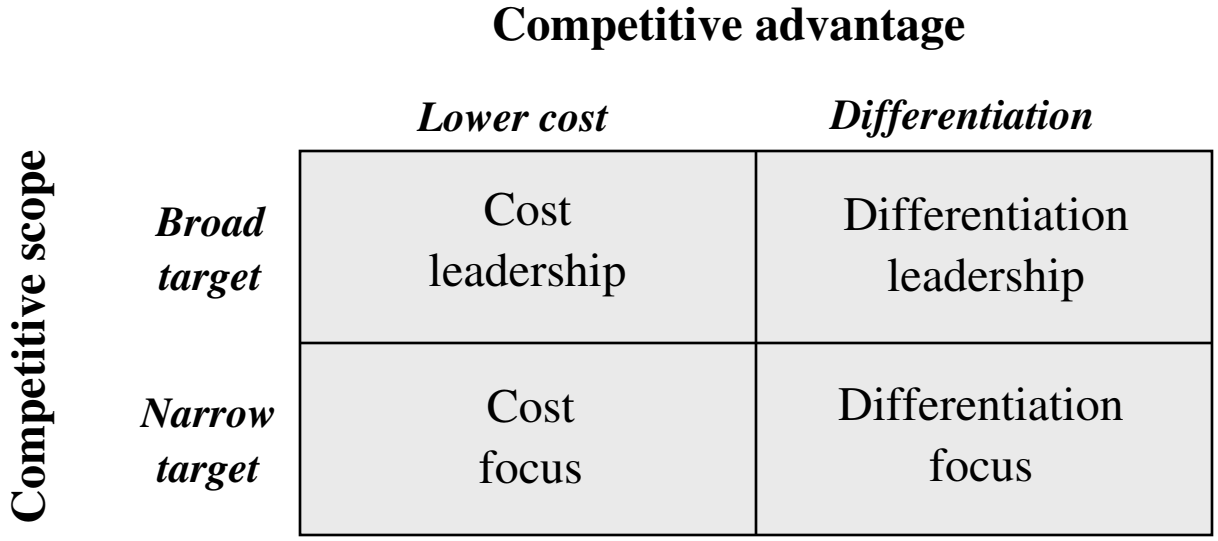
Competition

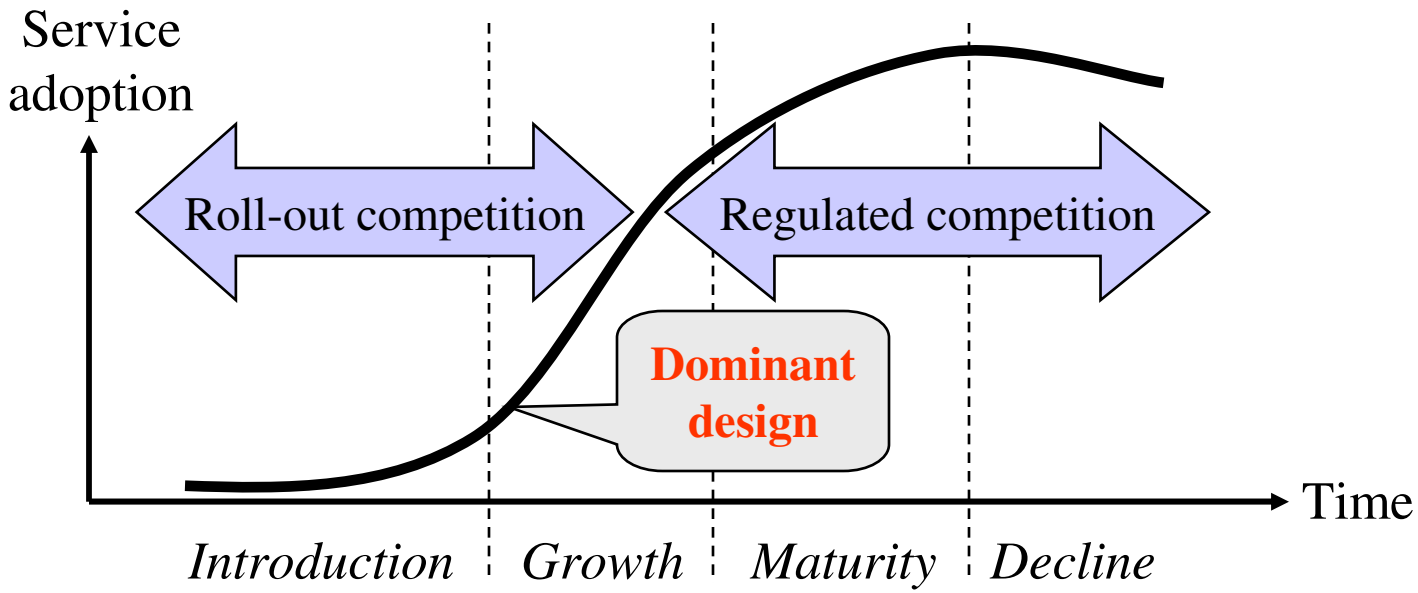
S-38.3041 Networking Business

Generic Business Strategies



- Cost leadership may lead to a beneficial circle: high market share ⇒ supply-side economy of scale ⇒ volume purchase discounts ⇒ sustainable cost leadership
- Differentiation leadership may enable higher prices ⇒ higher profits ⇒ more R&D ⇒ more differentiation ⇒ sustainable brand leadership

Competition and service life cycle



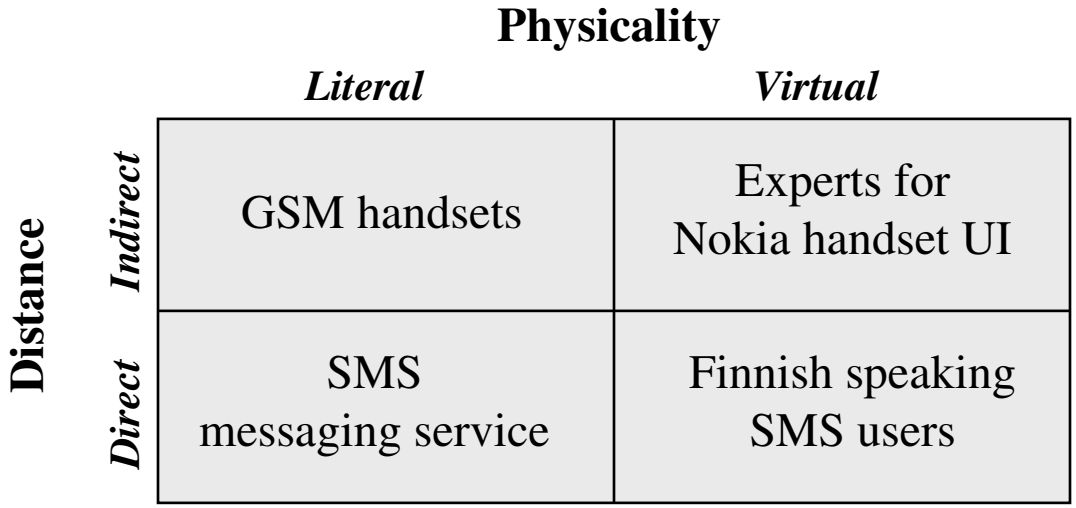
- Regulator can intervene when sufficient market data exists
- Dominant design and market shares are often established before regulatory intervention ⇒ early competition is often guided by the non-optimal legacy regulation (e.g. VoIP)

Competition and Network Effect

- *Network effect* may remain as a *network externality*, and lead to *market failure*, if it cannot be *internalized* by the players (ref. congestion)
- Network effect is *direct* when it is generated through a direct physical effect of the number of purchasers on the quality of the product (e.g. Internet subscription)
- Network effect is *indirect* when complementary goods become more plentiful and lower in price as the number of users of the good increases (e.g. PCs get cheaper when more Internet subscriptions are sold)
- Network is *literal* when it is physical and can be legally owned by somebody (e.g. Internet router network)
- Network is *virtual* when it is metaphorical and human-oriented (e.g. speakers of English language)

Source: Liebowitz, Margolis, 1994

Competition and Network Effect

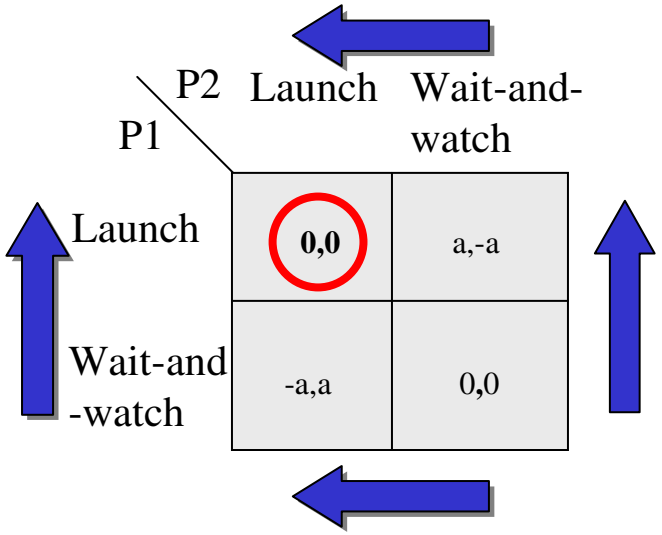


- Network effect is strongest when *direct* and *literal* (e.g. SMS service)
  - ⇒ End-to-end interoperability more important than differentiation
  - ⇒ Scale economy drives ⇒ players become big
  - ⇒ Competition oligopolistic ⇒ regulator likely to intervene
- Network effect is weaker when *indirect* (e.g. handsets or digital content)
  - ⇒ Only partial interoperability required (client-server)
  - ⇒ Differentiation can bring advantages ⇒ fragmentation
  - ⇒ Social surplus can be maximized despite fragmentation
  - ⇒ Regulator less likely to intervene

Game Theory

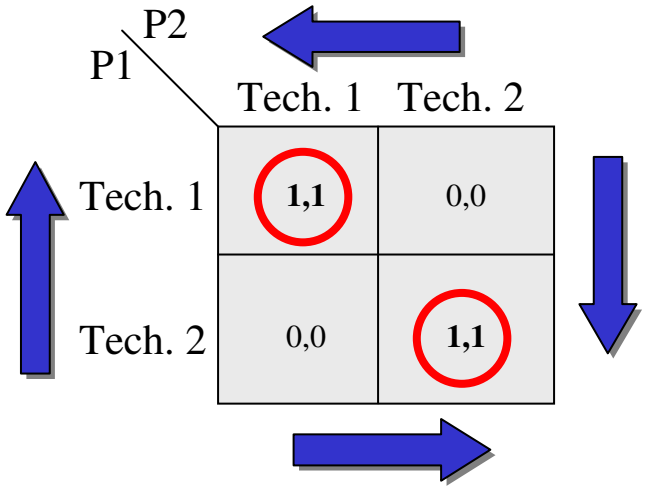
Two-Player Nash Equilibrium: Examples in Mobile Industry

New service roll-out decision
(first mover advantage)



One Nash Equilibrium

Technology choice decision
(network effect in interconnect)



Two Nash Equilibriums

Game Theory

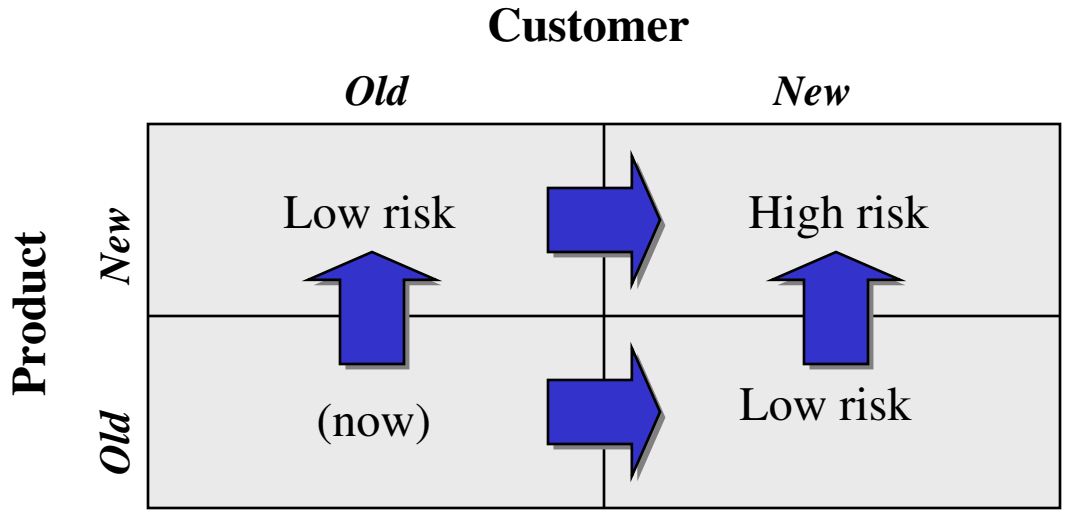
Models for a small number of players

- Bertrand model for one-step competition (ref. MOB game)
  - **price** as a strategic variable (prices posted at the same time)
  - quantities selected by customers preferring cheaper
  - minimum of all the firms' prices determines market price
- Cournot model for one-step competition
  - **quantity** as a strategic variable (quantities posted at the same time)
  - market price depends on and adjusts for the market quantity
  - all quantity sold at the same price
- Stackelberg model two-step competition
  - players post quantity/price one after another
  - leadership

Modeling remains simplistic from the practical telecom viewpoint!

Market Entry Strategies

Incumbent's desire for risk control

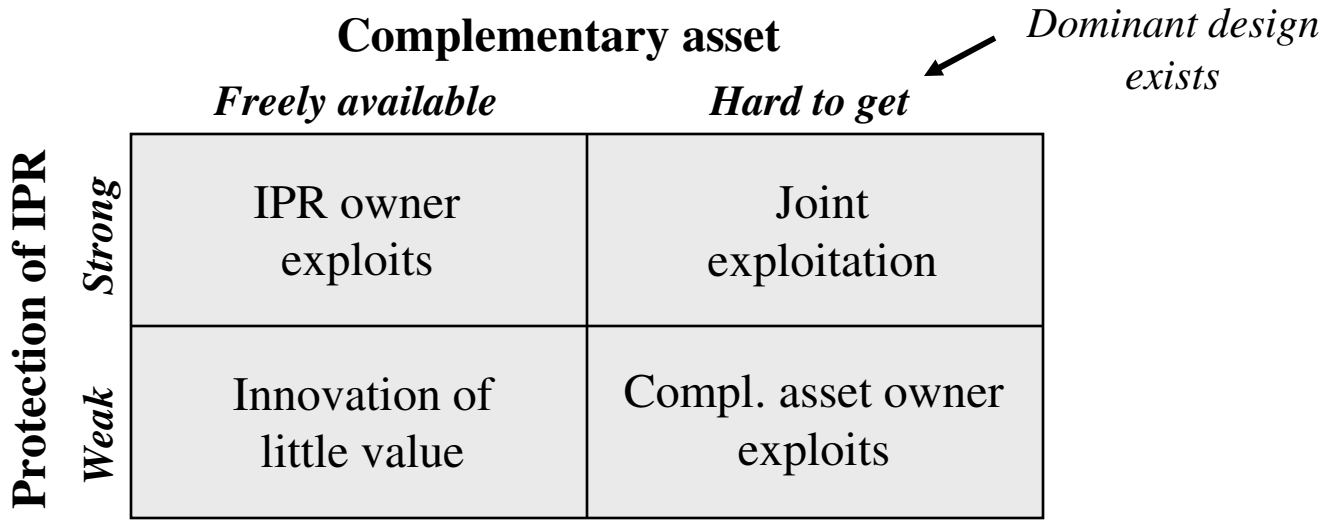


- Incumbent has more to lose ⇒ often takes limited risks only
- New product category and new customer segment involve risks
- "One risk at a time" helps managing risks
- Sometimes competitive time pressure forces taking both risks at the same time

Source: Teece, 2001 (modified)

Market Entry Strategies

Innovator's need for complementary assets



- Complementary assets turn an innovation into commercial success (e.g. browser war between Netscape and Microsoft)
- Innovator should as early as possible
  - identify the required complementary assets (e.g. sales channel, technology)
  - identify toughest competition: imitators vs. complementary asset owners
  - define strategy with respect to complementary assets
  - in case of "too heavy" innovation ⇒ sell IPR immediately

Source: Teece, 2001 (modified)

Market Entry Strategies

Example: Virtual Mobile Network Operators

	Price	Focus	Differentiate	Reselling	Clustering
Source of roaming contracts	Local MNO	Local MNO	Local MNO	Self	Foreign MNO
Source of service platforms	Local MNO	Local MNO	Self	Self	Foreign MNO
Importance of content partners	Low	Low	High	Low	High
Importance of new services	Low	Medium	High	Medium	High
Importance of own brand	Medium	High	High	Low	High
Feasible number of subscribers	High	Low	Low/medium	High	Medium
Feasible ARPU	Low	High	High	Low	Medium
Typical initial target segment	Students	Minorities	Early adopters	Other MVNO	Business users

Customer Lock-In (1/2)

Concepts

- *Lock-in* of a customer to a service provider is proportional to the inter-provider *switching cost* (direct and indirect cost)
- Service provider may inflate the real switching cost with additional anti-competitive margins
- Examples of switching cost are the cost and pain of changing a phone number, email account, or web site address
- In practice, perfect competition conditions may not be achieved because of customer lock-in
- Regulator keeps reducing the switching cost to promote competition and to cut prices (e.g. number portability)
- Effects of lock-in can be quantified by observing that service providers can obtain profits per customer equal to the switching cost!

Customer Lock-In (2/2)

Quantification

- Let service providers (*i* and *j*) have a monthly charge of *p* and a monthly variable cost of *c* per customer. In a competitive market and in the absence of switching cost the price would simply be $p=c$
- Now, at equilibrium, let it cost customers *s* to switch providers, let providers offer one-time discount *d* to attract new customers, and let *r* be the monthly interest rate

(1) $p_i+p_i/r=p_j-d_j+s+p_j/r$, *price for staying equals that of switching*

(2) $(p_j-c)-d_j+(p_j-c)/r = 0$, *present value of profits equals zero*

$\Rightarrow$ $(p_i-c)+(p_i-c)/r = s$

present value of a customer equals her switching cost

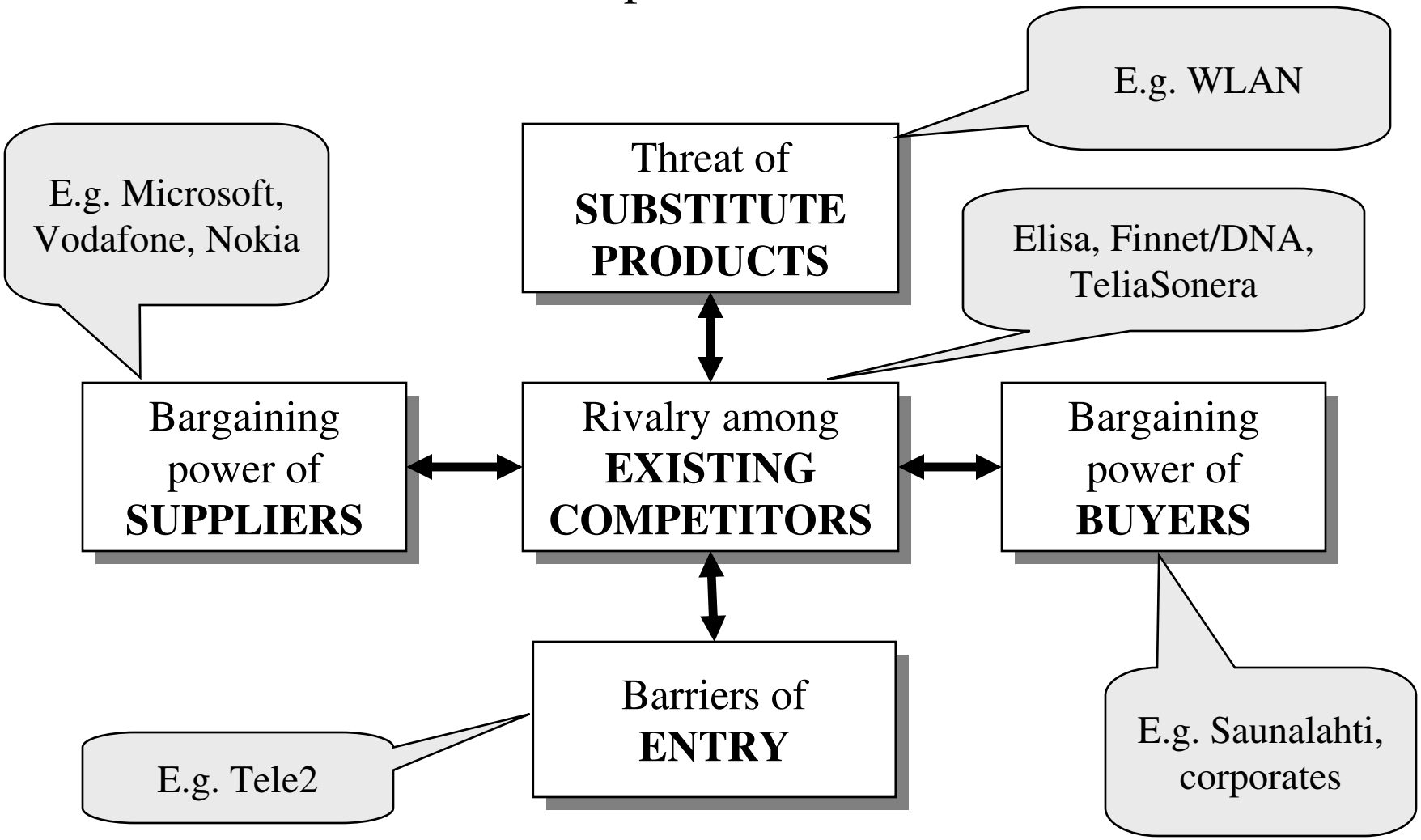
or, $p_i=c+rs/(1+r)$

price equals marginal cost plus mark-up on switching cost

Source: Courcoubetis et al, 2003

Porter's 5 Forces

GPRS Operators in Finland



Porter's 5 Forces

GPRS Operators in Finland: Barriers of Entry (e.g. Tele2)

Key factors

1. Government policy (e.g. number and conditions of licenses)
2. Capital requirements (e.g. cost of radio coverage)
3. Economies of scale (e.g. cost of service platform)
4. Switching cost of customers (reduced by number portability)
5. Access to distribution channels (operator-specific retail)
6. Product differentiation (only for new value-added services)
7. Cost disadvantages independent of scales
   - favorable locations (BTS towers)
   - learning curve (competent staff)
   - (proprietary)
   - (favorable access to raw materials)
   - (government subsidies)

Porter's 5 Forces

GPRS Operators in Finland: Rivalry among Existing Operators

Key factors

1. Lack of differentiation or switching costs (e.g. number portability, prohibition of MS-SIM bundling)
2. High exit barriers (e.g. difficulty of mergers)
3. Capacity augmented in large increments (e.g. high cost of site visits $\Rightarrow$ few visits $\Rightarrow$ large increments)
4. Slow industry growth (e.g. mature market in Finland)
5. High strategic states (e.g. foreign alliances)
6. High fixed or storage costs
7. Numerous or equally balanced competitors

Porter's 5 Forces

GPRS Operators in Finland: Bargaining Power of Buyers (e.g. Saunalahti)

Key factors

1. Products are standard or undifferentiated (e.g. GPRS is turning into a bulk product)
2. Buyer purchases are a significant portion of the buyer's total costs (e.g. Sonera is a large portion of Saunalahti budget)
3. Buyer purchases large volumes relative to the seller's sales
4. Buyer has full information (e.g. Saunalahti is likely to get much information)
5. Buyer faces few switching costs (e.g. Saunalahti has difficulty in changing MNO)
6. Product is unimportant to the quality of the buyers' products or services (e.g. GPRS radio capacity is important to Saunalahti)

Porter's 5 Forces

GPRS Operators in Finland: Bargaining Power of Suppliers

Key factors

1. Few suppliers (e.g. few GPRS infra suppliers)
2. The supplier group's products are differentiated or it has built up switching costs (e.g. GPRS infra switching cost is high)
3. Supplier's product is an important input to the buyers business (e.g. GPRS infra is important)
4. Industry is not an important customer of the supplier group (e.g. GPRS operators are important to infra suppliers)
5. The supplier group poses a credible threat of forward integration
6. Not obliged to contend with other substituted products