Network effects

A premise

In traditional economic theory of demand, we generally assume that the value a consumer obtains from consuming a product is independent of whether others also consume the same product, or indeed how many others consume it.

This may be an appropriate assumption in many settings, but not in all..

Network Externalities

Many markets are characterized by **network externalities**, or **positive** consumption externalities.

- **network externalities** occur when the value of a good to a user increases with the number of other users of the same or similar good.
  - e.g. a telephone is not much useful if only a few people can be called with it—the amount of utility the phone provides is directly related to the size of the network.

Network Externalities

We can also find some similarities between demand for distinction and the idea of a **negative** network externality.

If a Premier League footballer seeks distinction by buying a Lamborghini sports car, then the value of that car as a mark of distinction requires that not too many others also own Lamborghini cars.

- we could say that if too many people own such cars then a negative network externality would apply: value as a source of distinction declines the more people own that type of car.

However, we will look at positive network esternalities.

Network Externalities

The number of users of a particular technology is often referred to as its **installed base**.

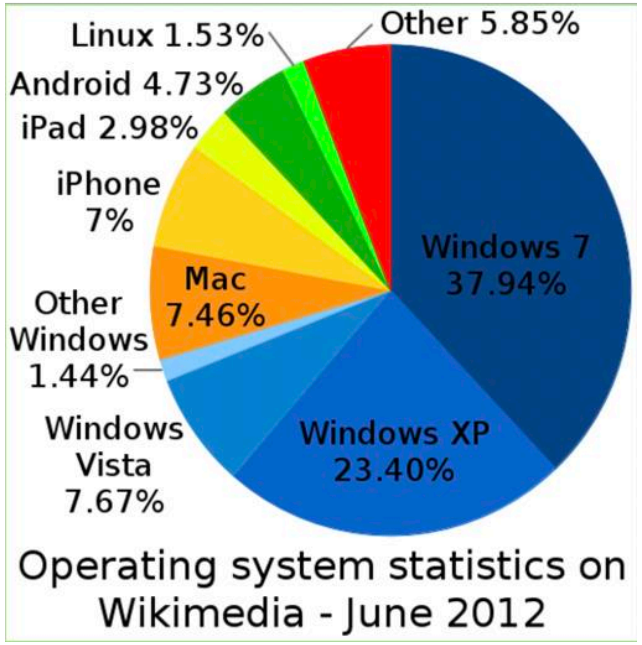
- The number of users of a particular good.
  - E.g. the installed base of a particular video game console refers to the number of those consoles that are installed in homes worldwide.

Network externalities also arise when **complementary goods** are important.

- Additional goods and services that enable or enhance the value of another good.
  - E.g. the value of a video game console is directly related to the availability of complementary goods such as video games, peripheral devices, and services such as online gaming.

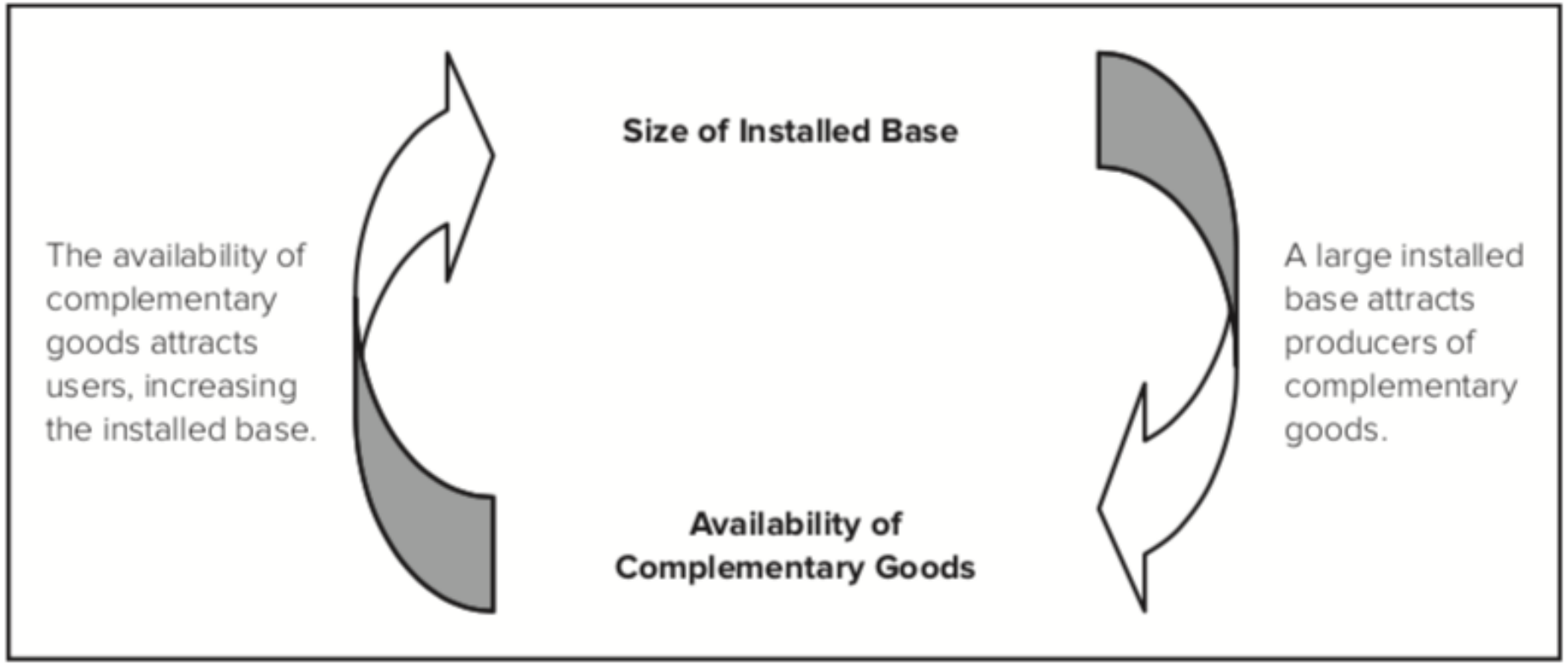
Network Externalities

Installed base



Complementary good

The Self- Reinforcing Cycle of Installed Base and Availability of Complementary Goods



SWITCHING COSTS

- In the traditional economic theory of demand, we generally assume that the consumer continually selects the best combination of price and quality.
- If competition or innovation means that a new product offers better value for money than any of the existing products, then the customer will switch without difficulty to the new.
- In short, we assume that there are no significant switching costs.
- That is a reasonable assumption in some contexts but not in all the existing context.

SWITCHING COSTS

Low or non significant switching costs.	High switching costs
A product that we can buy from the same supplier. For example, suppose that I am in the habit of buying a particular brand of a product from the supermarket because it is generally the best value for money. Suppose then a new brand becomes available, which is clearly **better value for money**. While I may have some residual brand loyalty, there is no large switching cost in selecting the new brand in place of the old.	A product that we have to buy from a different supplier. Even if we know that our existing supplier does not offer the best value for money, and we have no brand loyalty to the existing supplier whatever, we may be disinclined to go to the bother of switching because it requires **several hours of searching** on the Internet and a sequence of letters, emails and phone calls with old supplier and new. I may be reluctant to switch when **I am familiar** with a particular system, or if I have made large investments in it.

SWITCHING COSTS

When switching costs are high, customers will not continually select the product or service offering the best value for money.

This does not mean, at the other extreme, that consumers exhibit total inertia, or a complete reluctance to switch supplier.

But it means that such switches are occasional rather than continuous.

IMPLICATIONS OF NETWORK EFFECTS

The existence of network effects can have a variety of implications for economic behaviour.

We can group these effects into three categories:

1. Implications for **consumers of products** with network effects
2. Implications for **sellers of products** with network effects
3. Implications for **companies** that wish to exploit the fact that they are part of a network.

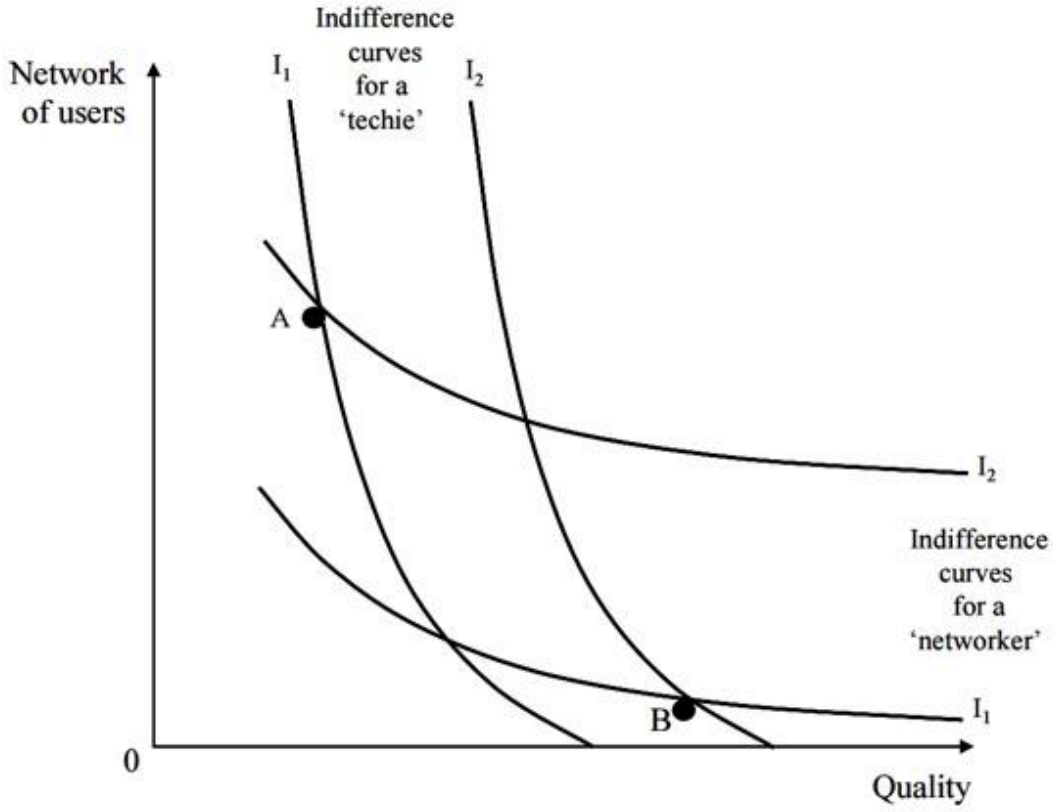
IMPLICATIONS OF NETWORK EFFECTS: Implications for Consumers

When there are network effects in the consumption of a particular product or service, then consumer behaviour may change in some important ways.

1. **The consumer no longer makes his choice decisions only with reference to the price and intrinsic quality of available products.** The consumer will also want to take account of the size of the network of others who use the same product or service.
2. **When network effects influence choice, buyers may prefer an inferior technology to a superior technology because the former has a large network of users while the latter doesn't.** This explains why superior new technologies may not displace inferior but established technologies.
3. **A group of consumers for whom network effects are important will try to coordinate their choices.** This is sometimes called a 'consumption economy of scale'.
   - One familiar example is that members of a family often coordinate their choice of mobile phone operator.

IMPLICATIONS OF NETWORK EFFECTS: Implications for Consumers

- Figure shows the indifference curves for two different types of consumer.
- The '**techie**' is primarily interested in the intrinsic quality, or technological sophistication of the software package, and is not so concerned if only a few others use the product. As a result, the 'techie' has rather steep indifference curves, as shown.
- The '**networker**' is less concerned about intrinsic quality, or technological sophistication, but is more concerned to ensure that he buys the same product as is used by friends and colleagues. As a result, the 'networker' has rather flat indifference curves, as shown.



Consumer choice with network effects

IMPLICATIONS OF NETWORK EFFECTS: Implications for Consumers

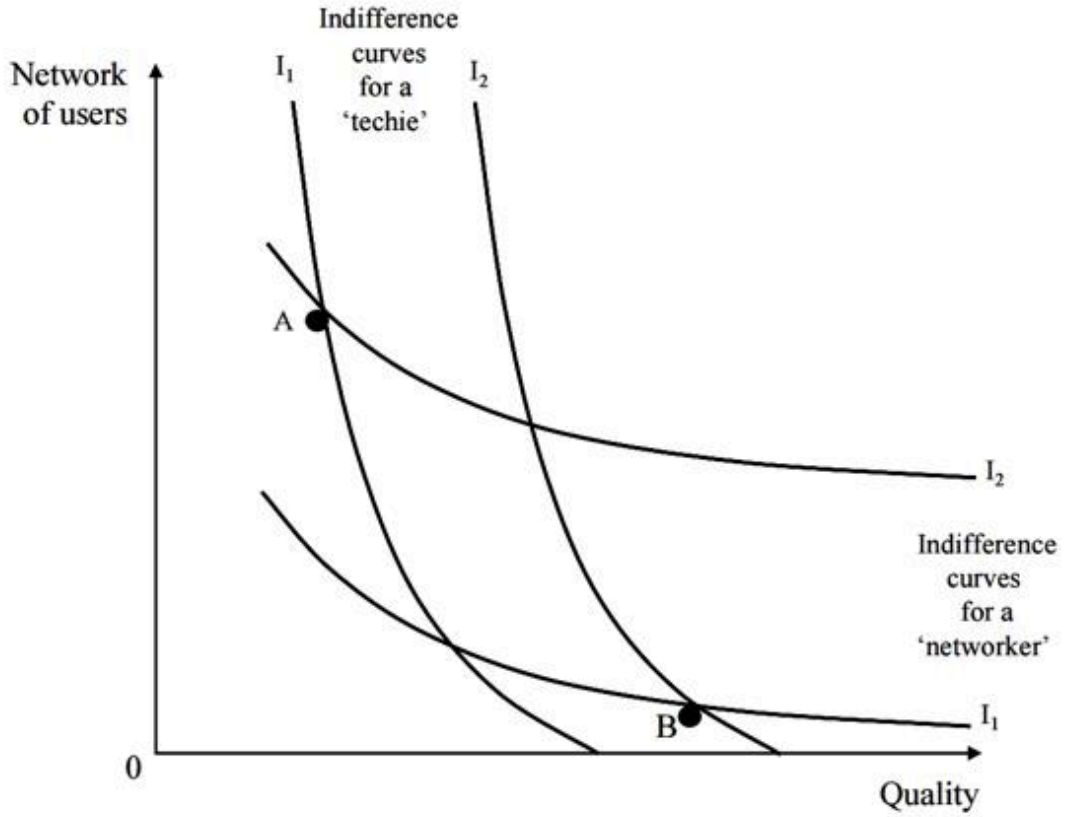
Suppose that the consumer faces the choice between two software products with the same price as shown in the graph.

One of these (A) is of relatively low quality but a large number of other consumers already own this product. The other (B) is of higher quality, but only a small number of other consumers own this product.

If network effects did not exist, then since the prices of A and B are the same, the sensible consumer should prefer B.

But when network effects are important, then the choice is not so straightforward.

The consumer will need to weigh up the relative importance of quality and network effects.



Consumer choice with network effects

Implications for Suppliers

The supplier must try to build up a network of users as soon as possible if consumer choice depends on network effects as well as intrinsic quality.

The firm that is successful in quickly building a network of users will find that their system is more attractive to subsequent users.

As these users join the network that makes the product even more attractive to the next wave of consumers.

In the absence of network effects, different products may co-exist in different segments of the market.

But when network effects are important, it is unlikely that many products can survive together.

The existence of this positive feedback means that competition with network effects often tends to produce one winner.

Implications for ‘Network Firms’

- By a ‘network firm’ we don’t necessarily mean a firm that produces products for consumers who value network effects. Rather, we mean a firm that makes it an explicit part of strategy to exploit being part of a network.
- Network firms are firms that specialise in a very narrow part of the vertical chain, and outsource most other activities.
- Such network firms are common in strong industrial clusters. In that context, the network firm can use some of the many firms in the cluster to carry out many parts of the value chain, while keeping to itself those activities in which it has a particular skill or expertise.
- This strategy works best when the network firm can draw on a large network.