Notes & Note taking template

Course - Best Digital Technology Business Models Today

M4.1: Search & Transaction Cost

Overview

The saving of search, transaction and post-transaction cost in comparison to traditional business models is one of the most important concepts underpinning the success of platform business models.

Some professors state this to be in fact the most important aspect.

Going back to the 1937 work of the Nobel Prize-winning economist Ronald Coase, we will see how internalising transaction cost was an important contributor to firms and large firms emerging in the industrial areas.

Platform business models, however, have reversed this process of internalising such costs but externalising them back to the participants of the platform by bringing them down to acceptable levels, distributing them on many shoulders and rewarding their acceptance with new value propositions.

We will be using 4 major verticals to demonstrate their importance and understand similarities & differences: Assets & Service Sharing, Social & Communication, Search & Vertical Search and eCommerce.

Key Objectives

We will learn about the cost structures of tech companies:

- Some theoretical background on
 - Search,
 - transaction and
 - o post-transaction cost
- Externalising internal (transaction) cost
- Examples from:
 - Assets & Service Sharing,
 - Social & Communication,
 - Search & Vertical Search and
 - o eCommerce

Intro / Theory Video

Search & Transaction Costs

"At the most fundamental level, there are two types of basic functions that [platforms] can perform:

- reducing search costs, incurred by the [platform's] multiple constituents before transacting,
- and reducing shared costs, incurred during the transactions themselves.

Any feature or functionality of a [platform] falls into either of these two fundamental types."

Andrei Hagiu, "Multi-Sided Platforms", Harvard Business School

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Our terminolgy:



"Search Cost"



"Transaction Cost"

Transaction Cost Theory

Ronald Coase

From Wikipedia, the free encyclopedia

Ronald Harry Coase (/ˈkoʊs/; 29 December 1910 – 2 September 2013) was a British economist and author. He was the Clifton R. Musser Professor of Economics at the University of Chicago Law School, where he arrived in 1964 and remained for the rest of his life. He received the Nobel Memorial Prize in Economic Sciences in 1991.^[1] Coase believed economists should study real-world wealth creation, in the manner of Adam Smith, stating, "It is suicidal for the field to slide into a hard science of choice, ignoring the influences of society, history, culture, and politics on the working of the economy." $^{[2]}$ He believed economic study should reduce emphasis on price theory or theoretical markets and instead focus on real markets. [3][4] He established the case for the corporation as a means to pay the costs of operating a marketplace. [3] Coase is best known for two articles: "The Nature of the Firm" (1937), which introduces the concept of transaction costs to explain the nature and limits of firms; and "The Problem of Social Cost" (1960), which suggests that well-defined property rights could overcome the problems of externalities if it were not for transaction costs (see Coase theorem). Additionally, Coase's transaction costs approach is currently influential in modern organizational economics, where it was reintroduced by Oliver E. Williamson.



Transaction Cost Theory

"Our task is to attempt to discover why a firm emerges at all in a specialised exchange economy. [...]

The main reason why it is profitable to establish a firm would seem to be that there is a cost of using the price mechanism. The most obvious cost of "organising" production through the price mechanism is that of discovering what the relevant prices are. This cost may be reduced but it will not be eliminated by the emergence of specialists who will sell this information. The costs of negotiating and concluding a separate contract for each exchange transaction which takes place on a market must also be taken into account. Again, in certain markets, e.g., produce exchanges, a technique is devised for minimising these contract costs; but they are not eliminated. It is true that contracts are not eliminated when there is a firm but they are greatly reduced."

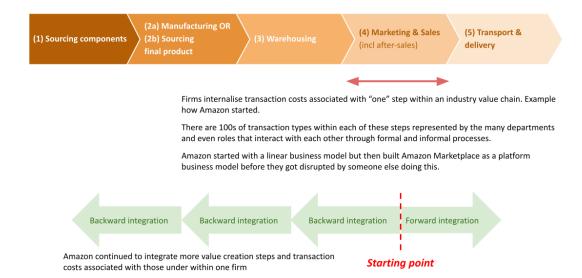
Coase, Ronald H. (1937). "The Nature of the Firm". https://onlinelibrary.wiley.com/doi/10.1111/j.1468-0335.1937.tb00002.x

Transaction Cost Theory: Categorisation

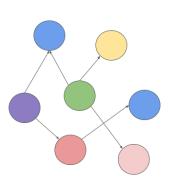
- 1. **"Search and information costs** are costs such as in determining that the required good is available on the market, which has the lowest price, etc.
- 2. **Bargaining and decision costs** are the costs required to come to an acceptable agreement with the other party to the transaction [...]
- 3. **Policing and enforcement costs** are the costs of making sure the other party sticks to the terms of the contract"

Oliver Dahlman, 1979

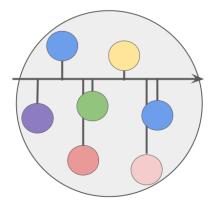
Amazon Vertical Integration over time



Evolution of Transaction Costs: internalisation vs externalisation



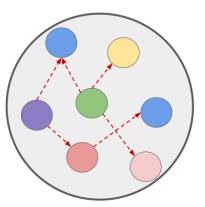
Pre-industrial and early industrial: Many direct interactions among economically small agents / individuals ⇒ Considerable transaction costs (all external) involved for the participants



Emergency of firms & large firms (linear business models)

⇒ one of the reasons is that transaction

⇒ one of the reasons is that transaction costs are internalised and thus - on balance and at scale - lower than direct transactions



Platform business models

⇒ lower the transaction costs to an
"acceptable" level for participants and
externalise them back. All transactions occur
on the platform. The "market" is not perfect
but acceptable for a sufficiently large number
of participants

Search & Transaction Costs

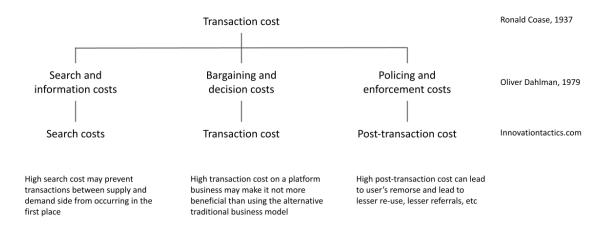
Traditional (linear) Business Models:

- 1. Internalised certain transaction costs to gain competitive advantage
- 2. Then optimised & reduced as much as possible (decade long processes)

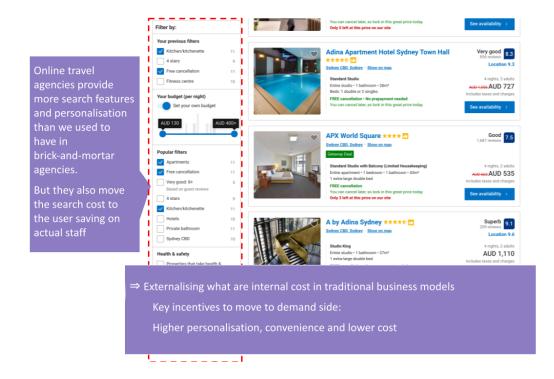
Platform Business Models:

- 1. Externalised certain transaction costs
- 2. On aggregate these are likely higher than within comparable linear biz models
- But distributed on many more shoulders (supply / demand side participants) → not necessarily competing with traditional businesses on the same cost structure
- 4. In return for provided (new) value propositions

Search, Transaction & Post-transaction costs - Terminology



The term "cost" can include an individual's time, efforts, skills and knowledge, uncertainty, financial costs, need to make decisions or include risks.



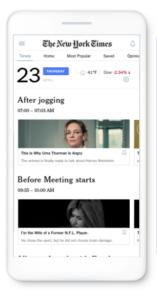
Facebook:

2.5 billion users create content that competes with the content of traditional content creators such as (online / offline) news papers, magazines, media

Content creation cost negligible

Incentive for user: engaging, fast way to communicate with many contacts at once



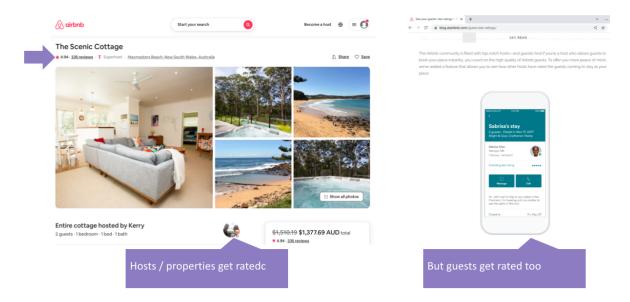


New York Times:

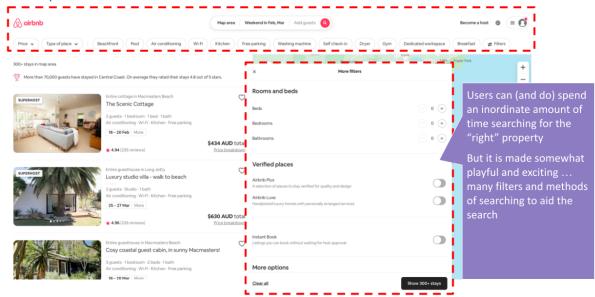
1,600 salaried journalists professionally create

Content creation cost one of

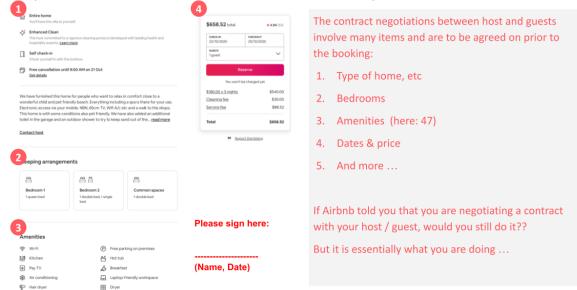
Example: Airbnb



Example Airbnb: search cost



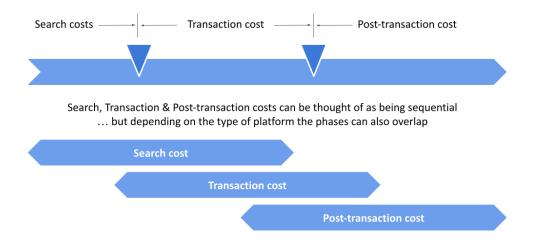
Example Airbnb: transaction cost - contract negotiations



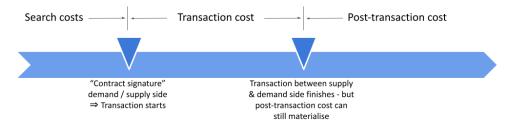
Example Airbnb: Post-transaction cost - trashed home



Search, Transaction & Post-transaction costs



Search, Transaction & Post-transaction costs



Search, Transaction & Post-transaction costs can occur on several levels:

- 1. In comparison to traditional methods of delivering the same / very similar value proposition
- 2. In comparison to other platforms (competitors) that are doing the same
- 3. On the level of the app / website

Examples / detailed resources

Resource 1: Search, transaction cost additional details

Google

Search Costs
Transaction Costs
Post-transaction Costs

We are looking at search, transaction and post-transaction costs for Google Search. Note that many searches are not a one-off, sequential transaction. Some searches endeavours (e.g. travel planning) can consist of over a hundred related search transactions spanning quite a period of time across several devices and intent (see customer journey section). The lower half shows some of the measures that Google is taking to ensure the respective "cost" savings

Search costs

Search costs start when the user starts typing a search query. The search can go for a while (with refining search, going back forth, etc) in one or several sittings

Clicking on search results

Transaction costs

The transaction generally starts when a user clicks on a search result. In some cases, it starts earlier when website content is displayed on the search results page, especially on vertical specific results

Acting on website content

Content

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Post-transaction costs

Transaction costs still continue after search is completed. User that act on the website (e.g. purchases) or based on website content may be remorseful towards Google when directed to bad pages or even just concerned about privacy

Search and transaction cost reduction are some of the most important elements of the platform business model; post-transaction cost reduction is an important trust booster and important for repeat transaction (returning user)

- Most work happens before a search query: crawling, indexing of pages, etc
- Natural language understanding of search query (hummingbird update)
- 3. Auto completion of search queries
- 4. Auto correction of typos
- Light personalisation: location, language, browser history (depending on privacy setting)
- Ability to subscribe to updates to search queries (news updates sent to mail account at chosen cadence)
- 7. "Best" search results placed at top
- Display of search results based on understood search intent

- Search ranking considers page loading times, on-page factors (e.g. formatting, mobile friendliness) to save user on-page transaction time
- Knowledge graph brings together data from several source onto the results page to avoid having to click on several pages

Vertical search:

- Reducing transaction costs for vertical search results, esp local business search, hotels, flights, knowledge panels, etc
- → here Google saves the user transaction costs by offering their own solution on the search result page which typically go to the end-business (e.g. hotel site) cutting out other platforms (e.g. OTA) where same queries have to be entered

- Identify and isolate pages with security, safety, scam, etc issues
- 2. Transparency around privacy and options to update setting
- Improve future search results based on user signals, e.g. short engagement time with top search results, immediate bounce, etc
- Major algorithm updates when systemic issues found (e.g. black hat SFO)
- Quality raters perform review search results by quality rating respective webpages including user needs, EAT, and more (see key partners)

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Your notes:

Facebook Search Costs
Transaction Costs
Post-transaction Costs

content

We are looking at search/(post-)transaction costs from a user-to-user perspective but this includes influencers as well (esp on Instagram). We are comparing these costs to other forms of social media and/or messaging / keeping in contact. Keep in mind that the term "costs" can include efforts, time, skills, knowledge, money and other resources.

Search costs

It is very easy to communicate with any of your contacts. However, unlike Twitter, you can only write to your contacts (or those that allow via privacy settings).

Search costs are, however, very low in that Facebook will display content on ones news feed that it thinks one will engage with (incl ads)

Transaction costs

Finding content to engage with comes at low cost and, in fact, the various ways of nudging to contribute even make the costs "negative"

content

spurious (or even dubious) content. Platform health is important

Post-transaction costs

The transaction costs still continue after it's completed.

Posts can get likes or negative Consuming Cost can occur when one engages with Contributing comments, harassment, bullying. Other misinformed and acting against one's own best interest, etc

Search and transaction cost reduction are some of the most important elements of the platform business model; post-transaction cost reduction is an important trust booster

Consuming content:

- 1. Easiest form is to just read one's feed. The algorithms have display for each user what it thinks will be most engaging
- 2. Facebook displays increasingly on social (i.e. content from contacts). Instagram has a wider mix of social and "media", i.e. content from influencers, VIPs, brands, etc.
- 3. Messenger/Whatsapp are (almost) purely contact based (plus some ads). Easier than calls in that one can send message anytime and wait for response when convenient to the other
- 4. Content and posts with comments from friends displayed prominently so that engagement can continue (or even virality)

Contributing content:

Responding to consumed content, sharing, liking, adding emojis are very easy, incl interacting with one or multiple contacts

Consuming content:

- 1. Basically, scroll down until a topic of interest is found. As users engage with topics and users, the algorithms learn about the user's interest and present more topical content in future
- 2. Ability to unfollow/block users to stop spurious content and reduce transaction cost (it is much better than broadcast media in any case, but will get better and better as user's interest graph "learns")

Contributing content:

- Ease of posting content (text, photos, creating albums, tagging friends & locations, etc) seen by friends
- Facebook prompts to post, displays notifications, nudges to post, stimulates responding, displays who is active, etc

Consuming/contributing content:

- 1. Facebook runs a continuous platform health initiatives with algorithms and thousands of reviewers, suspends millions of accounts yearly
- 2. Engaging 3rd party fact checkers in the identification of fake accounts
- 3. Racing with bad actors in improving (machine learning) algorithms to detect fake accounts and content
- 4. Balancing with freedom of speech
- Allows user to: (a) Reporting abuse, (b) block users (c) moderate responses
- Closing of API loopholes
- Significant activities for platform safety, digital wellbeing and community standards

Search, Transaction and post-Transaction costs (examples)

You can find a lot of platform-specific examples in the respective case studies. But for our purposes here, we are harmonising the key user activities into the following phases: search for content, consume and/or contribute content, act on content.

All these types of activities can have elements of search, transaction and post-transaction costs involved. You can't surgically separate it. But search costs are likely more frequently associated with searching for content, transaction costs with consuming/contributing content and post-transaction costs with acting on content (but note, all three phases can have all three types of costs). Here are some examples



Search for content

Targeted search: Search platforms are typically used for targeted search via keywords. This is also possible on Social (e.g. hashtag on Twitter) but not the predominant search mode

Explorative search: Scrolling through News Feed is explorative functionality on the result page search and the most common way to identify content to engage with on Social platforms. Presenting previews is a form of explorative search on Search platforms

Social search: Search can be conducted by asking close or wider connections on Social or via forum results on Search

Content ranking: All platforms use ranking algorithms for the presentation of content irrespective of the search mode. Ranking algorithms are proprietary and a secret of the platforms

Consume/contribute content

Previews help to get a glimpse into a post without having to read the entire thread. Like counts and other signals can help to decide whether or not to engage with the post

Digital properties can offer key maps, hotels, shops, etc Following gets the right content

into one's News Feed (without search). "Unfollow" or "Show less often" options when no longer desired

Ease of contributing content is crucial as it is the "harder" activity

Search: All webpages crawled and indexed automatically Social: no need to select contacts before posting. All posts have an input field to comment, emojis, liking, etc

Ease of posting photos, videos without text

Act on content

Post-transaction costs range widely, from getting (credit card) data stolen to bad medical advice. Platforms aim to not link to dubious sites through algorithms, user reports and human efforts

Privacy: Social allows communication to individuals, groups or all contacts to reduce costs of contributing content. Snapchat encourages spontaneous posting through

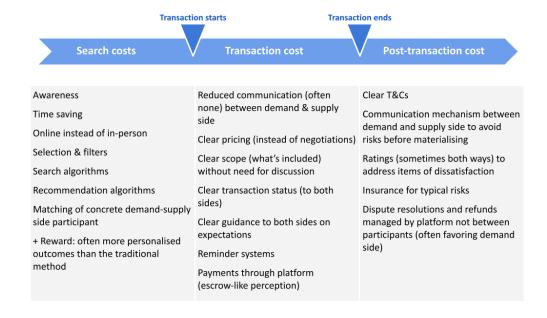
Privacy: all platforms give more control over one's data

deletion after 24 hours

Generally, platforms take increasing responsibility for 3rd party content

We would exclude platform manipulation (e.g. fake news) from this as it's better to see them as wider negative externality rather than the outcome of a single transaction

Resource 2: Common types of Search, Transaction cost savings



Resource 3: Search & Transaction Cost Examples: Social vertical

Snapchat Search Costs Transaction Costs Post-transaction Costs

You could look at search/transaction costs for Snapchat in a number of ways. We are looking at this from a user-to-user perspective. In this view we are ignoring the business-to-user perspective. This makes sense because Snapchat's core value proposition by far is the "fastest way to communicate". We are comparing these costs to traditional social media (mainly Facebook) because that is what they went about to improve.

Search costs

Compared to other social platforms, Snapchat made it easier to communicate directly with individual friends (rather than posting to all) or switching between apps to take a photo and then to write text and

Saving efforts in letting the photo communicate the message instead of text

Transaction costs

Taking a photo, expressing emotions (e.g. via filters), adding a message and sending can be done within seconds

Intent to communicate Sending photo

Post-transaction costs

The transaction costs still continue after it's completed. A photo on social media can attract likes or negative comments or trigger continuous competition on posting the best photos. Snapchat aims to avoid this through deletion by default

Search and transaction cost reduction are some of the most important elements of the platform business model; post-transaction cost reduction is an important trust booster

User-to-user:

Sending

- 1. Search cost reduction in that users don't need to find good locations, clothing, aim to look great before taking and posting a Snap (photo) given all photos will be deleted after 24 hours by default (unless saved)
- 2. Send button straight there (no switching to SMS). Communication via photo - saving "search costs for words"

- 3. Notifications of friend updates / photos
- 4. Latest friend update first
- Photos appear under the friend's name rather than a in a feed that all connections can see
- Separation of "social" and "media" → friend updates are prioritised: up the top in Discover (left swipe) and Chat (right swipe)

- 1. The app opens directly to the camera
- 2. Lenses/filters are next to shutter-release button \rightarrow reduce transaction cost for engaging/fun pictures
- Lenses/filters also reduce need for a "perfect" setting in that they provide an alternate way to create engagement and in some cases make fun of oneself
- Swipe right: Discover with stories from friends, influencers and professional
- 5. Receiving and responding is equally fast

- 1. Photos deleted by default but can be saved as desired
- 2. Photos don't end up on a user feed or personal page that is accessible forever (by default)
- 3. Photos are only visible to all friends if posted to My Story but not by default
- 4. Lenses and filters divert attention away from the setting, clothing, etc that is typically being used in other social media to frame (show off)
- User "compete" on fun factor rather than on showing off



Search costs

The user may be searching for ideas, knowledge and/or products/services. They may have high, low (or no) purchase intention

Businesses want to connect with the right type of user for their product/service

Transaction costs

It makes sense to define the start of transaction from moment the user (intentionally) clicks on a business pin (or business page). Clicking business Assuming that their discovery journey has moved them from low to high(er) purchase intention

Post-transaction costs

The transaction costs still continue off-page (from Pinterest) due to the fact that one cannot purchase within

Post-transaction costs start incurring after the users actually purchases something

Search and transaction cost reduction are some of the most important elements of the platform business model; post-transaction cost reduction is an important trust booster

For User:

- Search box
- 2. Related search for guidance
- Following other users or their boards
- Notifications 4.
- 5. Pinterest Lens
- 6. UI/UX, presentation layer
- Display of relevant and personalised results (incl ads)

For Business:

- 1. Targeting by demographic, interests, keyword, location and other
- 2. Creation of own boards by product/topic
- 3. Shop the look and various other business tools

For User:

Pinterest)

- 1. Planning tools: boards and sections on board for projects
- 2. Display of relevant ads only to avoid clicking back and forth
- 3. Ideally, the ads and pins have the relevant results (e.g. price and other product properties are displayed), filtering may be added
- 4. More relevant choices on the business' board

For Business:

- 1. Targeting by demographic, interests and
- Pinterest (ideally) delivers a user with a strong interest in the company's products due to the fact it knows the user's taste

For User:

Referral to

advertiser's

page

- 1. The user can get to a business via an ad or organically via a non-ad pin
- 2. Where it's via an ad, the expectation is that Pinterest has done due diligence and that the offering was accurate, to avoid fraud/counterfeit and that the business will manage issues, etc *
- The buyer is happy about the purchase because it was an inspiration-led journey (not a high-pressure sale)

- Good probability to delivery high-value leads due to taste graph
- Ideally: good business-user match and high lifetime value customer
- * Realistically, this is not the case yet

Resource 4: Search & Transaction Cost Examples: Asset & Service sharing
Value propositions
Value propositions to riders
Uber Eats value proposition to consumers
Uber Eats value proposition to consumers
Value proposition to drivers (Uber Rides & Eats)

Jber

Search Costs Transaction Costs Post-transaction Costs

Search, transaction and post-transaction costs can occur at several levels of the business model: (1) the value /proposition in comparison to alternative offerings (e.g. taxi, public transport); (2) on the level of the actual business user processes; and (3) on the level of the App. Here are some examples; an exhaustive list may exceed 10x of the below. This is a must-do activity in the design of a business model and App.

Search costs

Search costs begin when the riders start to look for transport options to a destination

For drivers they start when they look for riders (e.g. a taxi cab looking out while cruising)

Entering the

vehicle

Transaction costs

The transaction generally starts when a user enters the vehicle.

Several options now to trade-off time cost vs monetary cost: UBerX, Express Leaving the Pool, e-scooters, etc vehicle

Time and cost known upfront for pea of mind

Post-transaction costs

Transaction costs still continue after search is completed. User that act on the website (e.g. purchases) or based on website content may be remorseful towards Google when directed to bad pages or even just concerned about privacy

Search and transaction cost reduction are some of the most important elements of the platform business model; post-transaction cost reduction is an important trust booster and important for repeat transactions (returning user)

- 1. Low waiting times compared to search for taxi. Average waiting time upon order: 3-5 mins in most cities
- 2. Surge pricing allows to get a ride within a short time even if other transport modes beyond capacity but comes at a price
- 3. Driver: no customer acquisition costs, low idle times between rides
- 4. For driver: surge pricing areas and notifications for better earnings (but unattractive times → high post-transaction costs, e.g. fatigue)
- 5. Eats: categorised, filters, search functions, favourites, reorders
- 6. Looking for a ride: current location pre-populated, only destination to be entered, saved favourites

- 1. Exact pick-up, drop-off point (no walk on either side) - or use of Pool to save money but some walk
- 2. Designated pick-up / drop-off points with malls, airports, stadiums, events
- Estimated pick up and arrival time, ability to see the driver approaching, routing tips for driver via App to avoid traffic
- Generally lower cost of the ride compared to taxis. But higher compared to public transport
- 5. Express Pool: lower price than UberX
- New Mobility: lower price and potentially cheaper and faster than public transport
- Eats: average delivery time 30 mins
- Eats (for consumer): larger portion of delivery cost paid by restaurant

- Upfront fare estimate →no bad surprises at the destination; reducing the fear to being "take for a ride"
- 2. Insurance by Uber
- 3. Cashless payment
- Support: for driver (e.g. issues mngt); & rider (e.g. forgotten items, etc)
- 5. Drivers: real-time earnings tracking, weekly / daily payouts, in the US: up to 5 timer/day pay out
- 6. Safety features (rider): driver background checks, driver & car details, share ride details w/ friends prior to ride, emergency button;
- Safety features (driver): emergency button, GPS tracking, user rating, reporting



Search Costs
Transaction Costs
Post-transaction Costs

Checking

Search, transaction and post-transaction costs can occur at several levels of the business model: (1) the value proposition in comparison to alternative offerings (e.g. hotel, traditional bed & breakfast); (2) on the level of the actual business / user processes; and (3) on the level of the App. Identifying these is a must-do activity in the design of a business model and App. Here are some examples.

Search costs

Reduction of search costs includes finding users who are willing to participate in short-term leasing among peers.

The scale of the network is essential for reducing search cost/efforts and needs to exceed critical mass by location or other search factors.

Transaction costs

Transaction costs are prevalent in the reservation process and thereafter.

It includes things like agreeing on the exact "contract" terms.

There is no contract between host and guest, each has a contract with Airbnb.

Post-transaction costs

These costs/risks typically materialise after the booking and prior, during or after the actual stay.

Many measures are pre-emptive and start early to reduce the likelihood of risks materialising.

Search and transaction cost reduction are some of the most important elements of the platform business model; post-transaction cost reduction is an important trust booster and important for repeat transactions (returning user)

For hosts:

- Finding the desired type of guests who are (1) ID verified, rated; (2) accepting the house rules; (3) accepting cancellation rules, amenities, service levels, etc
- Professional photoshoots
- Availability calendar

For guests:

- Amount of listings and choice
- Clear listing of all included amenities, service levels
- Accurate descriptions of the property
- Airbnb rules around stays
- Many filters: by location, property type, dates, etc

For hosts:

Booking

- Ease of joining process
- All reservation transactions
- Booking tools
- Guest rating
- Select cancellation policy
- Fees only occur when there is revenue (no upfront cost)

For guests:

- Booking process
- Clear list of amenities, services
- Host / property rating
- Location map
- Clear check-in process

For both:

- Communication via App
- Payment process

For hosts:

- Insurance
- Al scanning of reservations
- Safety tips
- Cost-free smoke detector
- 24/7 support
- Ability to set house rules
- A lot of resources on website

For guests:

- Hospitality standards
- Insurance
- Certain accident coverage
- Ability to change booking in line with cancellation policy
- Ability to review / rate if not satisfied

For both:

- Counterparty ID checked