DISTRIBUTED LEDGER TECHNOLOGY

Example

- **1** Do intermediaries serve their customers well?
- **2** Are transactions really private between counterparties?
- **3** Is the shared ledger always 100% accurate?
- **4** Who gets to update the shared ledger?
- **5** Is personal information absolutely private?
- **6** How are agreements handled in ledger?
- **7** Can applications be built on top of ledger?
- **8** Is blockchain all hype or ready for marketplace?

- **A** Can many companies share a single ledger?
- **B** Can intermediaries really be eliminated?
- **C** How would logistics companies work with shared ledger?
- **D** Is Amazon+ really needed in Web 3.0?
- **E** Is technology mature enough to support a DAO marketplace?

1

Interorganizational space between organizations is not optimized

border friction
redundancy
arbitrage
wasted resources

here we are sending a "copy" of information e.g. one server can send many copies of a web page → *transferring value (currency) is different we need a debit on one side and credit on other*

double spend problem — *but we don't know each other can we trust a peer we never met?* → *we trust a third party instead*

very common already sending emails visiting https websites

large companies cannot own blockchain instead works as a cooperative

Shared Prosperity
enfranchise people
no more scarcity problem
"Bank of One" < single bank for world

$5 smartphone (one day) + blockchain =

2

Asymmetric cryptography

Digital signature

Cryptography

Secure Hash Algorithm

like an address — *public key* — *I use your public key to know it's you*

mathematically connected

private key — *like a key to house* — *I send a private message (sign it)*

squiggly lines are a thing of the past

Encrypt and send data to retail blockchain
- shipping information for shipping product
- payment for the product
- reviews of products I have purchased
- etc...

Decrypt data from the blockchain
- trusted buyer? legit address?
- payment received before shipping
- no fake reviews of my products
- etc...

one way function, cannot be reversed
hash smaller than original input
can hash infinite amount of data

b94d27b9934d3e08a52e52d7da7dabfac484efe37a5380ee9088f7ace2efcde9

digital signature (for transaction data)

64 symbols represents data I am sending to retailer
If anyone tampers with it at anytime, the hash will change
Compare the hashes to make sure no one has tampered with transaction

Web 2.0

institutional trust has failed us → *web 2.0 incentive structures not working concentrating online power in too few hands*

Financial institutions are heavily regulated
Regulations require a lot of collateral be held
Many are exiting businesses because not profitable
Blockchain transfers smaller "risk" to each peer

Some banks will try to embrace "closed" blockchain solutions

counterparty risk will be between two parties in transaction
no need for central authority to take "risk" responsibility

74% of world population has no access to financial services (50% in U.S.)

diamonds now to risky for most banks
symbolics are not good enough to get GIA ratings
blockchains can trace diamond back to mine

- **Wells Farko** CLOSED — *Your money is safe / I will give you credit / I will help you make money* — **Blockchain** *stores and transfers value / Secure and tamper-proof ledger / No credit card fees or banking charges / Money moves around world instantly* — *Stops remittance rip off*
- **Century 21** CLOSED — *This house is really for sale / Keep you (and house) safe / Make sure you get good deal* — **Blockchain** *reduces paperwork, errors and cost / Secure recording of title, deeds and liens / Buyer/Seller transparency eliminates need for brokers*
- **Airbnb** CLOSED — *House is safe and available / You can trust renters / You will get paid for rental* — **Blockchain** *ensures offer is from home owner / Reviews ensure quality renters / No middleman fees and profit taking*
- **Uber** CLOSED — *Driver is not a criminal / Rider is trustworthy / Driver will get paid* — **Blockchain** *allows drivers to establish rates / Logs all transactions and uses/driver reviews / Offer additional services, like deliveries*
- **Ernst & Young** CLOSED — *Companies are truthful / Companies are paying taxes / Help companies save money* — **Blockchain** *leaves nothing for an audit / All data in shared ledger is already validated / Government collects taxes from the blockchain*
- **Netflix** CLOSED — *Monthly rental fee / No reviews to assess quality / A lot of media very old* — *You cannot buy a digital movie on Amazon* / *License only and cannot resell movie, like DVD* / *And you have to play it from Amazon site*
- **Facebook** CLOSED — *Only friends can see you / Will suggest friends/products / Can organize into groups* — **Blockchain** *prevents outside access to your data / Bad actors will not be on your "wall" / Provide censorship-proof communication* — *Centralized org needs to generate revenue* / *With blockchain, no ads are needed*
- **Voting Booth** CLOSED — *Can recount votes / Prove you can vote / Prove you live in the area* — **Blockchain** *authenticates voter identify-location / Vote counts are tamper-proof and instantaneous / Verifiable audit trail - no changing/removing votes*
- **Equifax** CLOSED — *Should creditors trust you / Get better interest rates / Help you improve credit* — **Blockchain** *has credit history in your encrypted id / You can share any piece of it with anyone / But data is absolutely private and under your control*
- **Car Dealers** CLOSED — *Cars are new and running / Know you are getting quality / Can give you best prices* — **Blockchain** *allows buying direct from manufacturer / Buying, finance, registration, insurance in single transaction*
- **Amazon.com** CLOSED — *Will market your products / Reviews can increase sales / Pay for better placement* — *will specialize more around hard (serial) computation but cloud storage will become peer-to-peer on blockchain* — *amazon webservices is ok*
- **NYSE** CLOSED — *Verify ownership in company / Equal access to information / Make money via trading* — **Blockchain** *reduces settlement time and cost / Buy the shares directly from each company*
- **Random House** CLOSED — *Decide if your book is good / We will market your work / Handle distribution* — **Blockchain** *sells direct from author to reader / Not locked into a "kindle" only device / authors can self-publish audio books*
- **Universal Music** CLOSED — *We know what will sell / Take advantage of new artists / Agree or we will drag you* — **Blockchain** *allows any artist to share music / Trackable and verifiable ownership of songs / Listener proof they purchased license to song* — *any creator of art needs fair compensation* / *spotify pays between $0.006 and $0.0084 per play*

3

betting with our money = financial crisis

Trusted Intermediaries
we trust our bank
we trust Amazon
we trust Paypal
etc...

Guarantee

Intermediaries:
sell our data
exclude people
slow things down
can be hacked
take high fees

Identity in Crisis ← *bad enough with people, wait for IoT billions/trillions of devices with unique identities*

companies own the virtual you → *undermining privacy*

facebook sells our identity
banks minimums to open account
centralized warehouses/logistics steal credit card data
amazon profit from reviews

we need incentive alignment

public key — *I want to buy art* — private key

Trust

private key — *I make art* — public key

peer to peer trust
The Trust Protocol

Distributed Ledger
there is no central authority
that monitors transactions

no more reconciling individual ledgers

4

Consensus Mechanisms
validate transactions without third party

how do all participants agree to the current status of the database if there is no central authority?

only one version of the truth

no node is trusted individually

each node is secure database
each node (server) keeps copy of database
we all maintain the shared database

Internet of Value

most are good actors

good actors (nodes) invalidate conflicting transaction (bad actor)

bad actor wants to cheat the system

would need to control > 50% of the nodes (thousands of servers) to change transactions in a block

hacker edits transaction to re-route shipment to different address

hacked block = has a different hash
consensus among nodes is this is a bad node and will be overwritten

block 4 hash changes → *hash 5 changes*

Achieve unified agreement
public ledger updated by consensus

Prevent double spending
prevent currency from being spent twice

Align economic incentives
incentive good behavior, punish bad actors

Fair and equitable
open source, so anyone can participate equally

Fault tolerant
even under attack, chain continues to function

39041 (below) only considers data 34750 also considers previous hash

nonce solves for data + previous

transactions cannot be deleted once in the blockchain

first block starts with zeros

data + nonce + previous

	Block: 1	Block: 2	Block: 3
Nonce:	34750	147697	22148
Data:	Mary 55 Material shipped 12/01 Contract signed for fabric ...	Tom got 55 Material returned Fabric ordered	New material shipped Fabric received Product ordered
Previous:	0000000000000000000000000000000000000000000000000000000000000000	00004221d0d91bc8bd54ec3f87b6ee9ad5b06f041eaaa9f05f92a6871e6bf892b8c7b41f5	00007f77bec05e7c1276482bc178da7fa88189745aca957eeb713c92933b3bbb
Hash:	00004221d0d91bc8bd54ec3f87b6ee9ad5b06f041eaaa9f05f92a6871e6bf892b8c7b41f5	00007f77bec05e7c1276482bc178da7fa88189745aca957eeb713c92933b3bbb	0000b5ce154bfc6bccdfbb2c0bf8ab658bdcd3eeaec38ba43bc2325b07d69
Nonce:	39041	34750	22148

chained *chained*

transactions cannot be changed, hash would change and blocks would become unchained

if old transaction was changed, hash would change and blocks would become unchained

Timestamp
each transaction (nonce) by a particular user at a certain moment in time

transaction duped? 2nd timestamp invalid

since Block is written, transactions are secure

proves that a transaction owned by specific user (key) at certain moment in time data is fully traceable

Let's hash next group of transactions...
Mary 55
Material shipped 12/01
Contract signed for fabric
...

6571a82678bd53f87dee9ad5b06f041eaaa9f05f92a6871e6bf892b8c7b41f5

hash needs to start with 0000 in order to add new block

no reason, goal is just to create a challenge (puzzle)

We need to add some additional data to transactions (number called a nonce)

unit of value recorded in blockchain
blockchain != bitcoin
does not have to be currency

Tokens
rewarded with tokens + transaction fees

Proof of Work
finding the nonce can be super difficult and require tons of computing power/electricity

nonce = 39041

00007afe901b81cfe510fd044ec7f195f4fae403ae9cb406e6ba3e72760f89

whoever gets to 0000 first gets to add the new block to chain
if 0000 too easy, just require more zeros at front of hash

easy for other nodes to confirm nonce is correct

eliminates "sybil" attacks creating fake nodes

need 51% of computing power to corrupt not 51% of the nodes (validators)

no nonce to solve so PoS more efficient

Proof of Stake
how many tokens are you staking?
Assigned to create the block — *"larger"* — *fraud? lose deposit*

smart contract

more you spend, more likely you will be selected

large economic penalties for bad actors take their deposit if they commit fraud

still a lottery, just increase chances

richest users will not always be selected

Different PoS Types
Delegated Proof of Stake
Leased Proof of stake
Masternode Proof of Stake
Zerocoin staking
Casper

Let's hash next group of transactions...
Validators — Buy "lottery" tickets — New block consensus — Receive transaction fees

nodes that want to create next block in chain

algorithm decides who creates block more tokens, more "skin in the game"

every validator sends a vote no consensus, deposit lost

no block reward (like PoW) collect fees for writing next block

most apps run off central server amazon purchasing facebook messenger etc...

5

Linked List Data Structure
this is not new technology, just a new combination of technologies

immutable links between blocks

Genesis Block → Block 2 → Block 3 → Block 4 → Block 5

add block 1 hash to block 2 and then hash 2
add block 2 hash to block 3 and then hash 3
add block 3 hash to block 4 and then hash 4
add block 4 hash to block 5 and then hash 5

block is "minted"

can trace back any event block by block

Every 10 minutes, new block of transactions is written

Who gets to create the new block?

e.g. 1MM people die each year from counterfeit drugs (cannot see supply chain)

can use any photo id — *take pic of license with phone / get code sent to phone / take selfie with phone / facial recognition matches*

94d999dc334e84d9
98f02e77de231d46
8a6463c8374f4047
659cc09e2525a2e

user id is shared
everything else has to be approved by user
billing address? shipping address?

but don't have to re-enter everytime
just open up pieces of your id

My Identity
right to be forgotten? general data protection regulation?
no longer needed - you have full control of your identity
can delete/add whenever you want

all identifier information in blockchain
different interactions contribute to id
instead of reverse web 2.0 process → *register at many different site*
need to remember dozens of passwords
or use same password at multiple sites

hackers love password reuse

my reviews
my social updates
my location/movements
my interests
my purchases

misuse by central organizations leads to laws and regulations

huge conflict of interest
pay to look the other way

but laws/regulations written by another central organization government

our identity is spread out... data and reputation do not flow well

centralized organizations suck up all the data (footprints) we leave behind — *lead us influence us manipulate us use data against us influence our vote?*

data centers getting too big → *large organization can "lock-in" users e.g. threshold to compete with Google too high*

hackers love centralized databases!

e.g. sports betting
blockchain will take all the bets
analytics will watch and interpret game
analytics will tell chain who to pay
no human is needed in this process

and no central database!

no intermediary needed
no auditor needed

6

Smart Property
title to property listed in blockchain

for example, vacation house listed in blockchain
validated guest uses smart contract to rent
contract creates from door code for lock

internet of things

new door code sent to vacationer
vacationer pasts review/comments after visit

contract communicates directly with front door/ door lock is on blockchain!

manufacturers may start by just replacing their websites
too risky to join the overall marketplace to start
but marketplace will attract a ton of traffic

100% online
no human needed
no airbnb needed

70% of people in world with have land have a tenuous title to it
blockchain is a game changer

self execute

Smart Contracts
also used to assign ownership of hard assets and temporary usage of those assets (servitization)

terms and agreements inside the block contract cannot be changed

Distributed Ledger Technology (DLT)
DLT has no single point of failure

do not need a 3rd part to oversee

- **Automatic** — *reduce time and cost for managing and enforcing*
- **Incorruptible** — *fully transparent follow prescribed rules*
- **Independent** — *no central organization peer to peer*
- **Certainty** — *Pre-determined and specific outcomes*

IoT/algorithmic oracles can be too rigid
humans are more flexible as needs arise

oracles provide contract inputs
will start with human input
but eventually IoT will handle

simple is best (to start)

blocks can contain more than transaction or identity data
can run full computer programs inside a block
turing-complete < simulate a computer and run programs

7

Decentralized Applications (DApp)
app that runs on blockchain with secured information
open source, autonomous and secure

Contracts for entire supply chain can be written in advance

Just need to input quantities, prices and conditions

Contracts are re-usable and live in the blockchain

- Purchasing sewing
- Purchasing textiles
- Purchasing from farms

because manufacturer selling direct, can set prices based on fluctuating inventories

make name generic (i.e. Amazon) may start with outdoor today, but can add other industries to same platform

amazon started with books and grew
might start with outdoor apparel then add outdoor gear then add outdoor guides etc...

selling on marketplace requires a smart contract
easy to contact...
good with refunds...
ship fast...
No? taken off marketplace

Marketplace Release 1.0
invite athletes and companys' employees to test marketplace

Marketplace Release 2.0
amateur athletes who secure invite from company/athlete

Marketplace Release 3.0
allow anyone to join marketplace

Decentralized Marketplace

B

Marketplace

$10 $90.00
Free two day shipping
Seller: Patagonia
Inventory: 120

each jacket as a unique id
this can be assigned early in the supply chain when it's sewed — *approved athletes could post additional pictures*
can give jacket to charity or portion of jacket cost
jacket does not go through intermediary
jacket goes straight to person in need of jacket

description
sub-description
charity
reviews

computer controls the entire transaction

users get discounts for buying 5X of Patagonia each year
can get marketplace discount for authoring reviews

marketing speak to sell product material list (good for searching) supply chain information

Mary made your jacket
Thank Mary for hard work
Cotton from ABC Farms
etc...

Patagonia + sewing factory can track if Mary gets a lot of returns perhaps needs more training?

patagonia may decide to match giving? there is no intermediary costs to giving recipient can send thank you for jacket

can buy with your id
do not have to share name+
your data is private
patagonia just wants to sell you a jacket

Consortium can vote to allow outsiders (e.g. bloggers) to add content to app

Smart Property
Contract
programmable transactions

patagonia is passing ownership of this "asset" to the buyer

can be used as a funding platform replace kickstarter (outdoors)
patagonia may sell pre-release products

only those that have purchased the product can do a review in marketplace

a charity "authentication" blockchain can be attached to the marketplace

Contract to sell direct to customers

Permissioless
anyone can join the network
anyone can be validator

Permissioned
approved actors can create contracts
approved actors can validate blocks

patagonia can respond to any review
users can upvote reviews as helpful (earn discounts)
users can also downvote reviews deemed not fair

reviews are held on the blockchain
can update a review or perhaps overwrite

NO FAKE REVIEWS
NO GAMING THE SYSTEM

If you did not purchase on marketplace you can not do a review on marketplace

can start marketplace as "permissioned" blockchain

this would be like Costco or Sam's Club
you don't have to pay to join marketplace
but you do have to prove who you are

will need to prove it's you
before you can join the marketplace
but patagonia+ does not see personal information
only sees that you are a legitimate member of marketplace

membership prevents manufacturers from posting fake reviews

earn future discounts for placing thoughtful reviews
machine learning reads reviews for substance
also earn access to sales and early product releases

a positive review from Tammy Caldwell or Alex Holland can increase jacket sales significantly

if 3+ manufacturers "certify" you as outdoor athlete you can get deep discounts to try products and post reviews
athletes are no longer "locked up" by a central authority
can wear multiple brands and still get sponsored for trips+

8

Bitcoin incorrectly framed most people's thinking around blockchain — *why many recommend using dB instead of blockchain*

Challenges

Blockchain Speed
all nodes are holding each block
ethereum can only handle 15 transactions/sec
transaction volume is a current issue

not everyone needs to process everything
every smart contract on every single node?

micro transactions can be handled off chain
digital tickets can be created off chain

(Quadratic) Sharding
separate block into separate "shards" (pieces)
not every node has to hold an entire copy of chain
ethereum planning for "vitus-level" processing in 2019

Side-Chain
parent-child blockchains (move data back and forth)
interchangeability of assets at a predetermined rate

World Economic Forum
By 2027, 10% of global gdp will be in the blockchain

Gartner
By 2025, Blockchain will save companies $19.8 billion (efficiency gains)

9 out of 10 companies will do a block chain project

- **Qualified Developers** — *software engineers are learning as they go large demand and limited supply*
- **Energy Consumption** — *Solving proof of work problems uses tons of CPUs Can require enough electricity to power Denmark*
- **Public Perception** — *blockchain != bitcoin and overshadows capability regulators incented to slow down blockchain*
- **Privacy & Security** — *Having private transactions on shared ledger Assurance needed that transactions will be private*
- **Building critical mass** — *blockchain is still a new technology many industry participants need to participate*

Early Successes

- **Humaniq** — *2 billion are "unbanked" have to deal in hard currency sit in line to pay utility bill*
- **Bloom** — *decentralized credit scoring 143MM Equifax profiles stolen reduces fee, more access to credit*
- **MintHealth** — *patient data very fragmented passive instead of proactive HC provides holistic health record*
- **Suku** — *supply chain opaque reach sustainability goals verify authenticity of goods*
- **Voate** — *concerns about voter fraud works off facial recognition west Virginia piloting*

Blockchain Decision Path

1. Need for a shared common database? *buyers want to shop on one site*
2. Multiple parties involved? *multiple merchants need to cooperate*
3. Merchants have conflicting incentives? *they are competing for the same buyer*
4. Uniform rules can govern merchants? *all merchants basically in the same business*
5. Need for a shared common database? *Buyers want to shop on one site*
6. Transaction rules do not change often? *buying rules on site will rarely change*

UPS would not be a blockchain company
would provide services to the blockchain

#1 advantage for amazon? ability to negotiate cheap (2 day) shipping

60+ outdoor retailers (together) on blockchain can negotiate with UPS and UPS feels no threat outdoor industry will buy 20K trucks

patagonia can still use fulfillment services to store and ship products

but warehouses will compete for patagonia's business

amazon owns ~50% of the online retail market it's their way (fees + ads) or the highway

Based on origin + destination shipping costs change in real-time depends on fleet usage/plane full...

Dynamic Pricing Engine
computes shipping costs in real-time on blockchain

Amazon has a single goal reduce transaction costs lower the costs, higher the profit and UPS is a part of transaction costs

UPS has 119,000 delivery vehicles FedEx has 160,000 delivery vehicles Amazon just ordered 20,000 vehicles not a threat... yet

C

2017 UPS 10-K
No customer accounts for more than 10% of our revenue

But if others build their own delivery network, could affect future growth of UPS

Shipping companies would attach to marketplace and give real-time shipping costs

e.g.
FedEx Free for 3 day
UPS $2.50 for 2 day

Patagonia pays for shipping up to X percent of jacket

or UPS could finance the entire marketplace

hedge against Amazon/Walmart/+

do not have to create from scratch
may use ethereum open source to start solidity as the programming language

ethereum becomes the operating system like microsoft is to desktop/laptop computers

can join the blockchain and automatically collect sales taxes part of the jacket smart contract

PayPal

marketplace can start by taking fiat currency

Bi-lateral Transactions
at some point add cryptocurrency (T zero transaction cool)

Hyperledger
linux foundation open source
250 companies, 3.6MM lines of code

E

IPFS
Interplanetary File System
use to host the entire marketplace blockchain

network of computers replication of data on select nodes

BLOCKCHAIN

David Gossett
303-710-6171

Gulhan Sumer
214-679-9716

Release 0.9
12/29/2018
36" by 60"

A

Every company has it's own bookkeeping system

ABC Farm Ledger	Debit	Credit
Sell cotton to Texas Organic Cooperative		$100
Cash	$100	

multiple ledgers redundant

Texas Organic Ledger	Debit	Credit
Buy cotton from ABC Farm	$100	
Cash		$100

need intermediary to handle money

requires expensive audit

Patagonia Ledger	Debit	Credit
Buy finished cotton from Organic Cooperative	$100	
Cash		$100

Patagonia cannot tell farm that supplied cotton

maps social and economic relationships
builds consensus about facts (governance)

- *ownership*
- *status*
- *authority*
- *identity*

Distributed (Shared) Ledger
What if ABC, Texas Organic and Patagonia could share a ledger?

These are encrypted transactions - only Texas and ABC can see

Sell cotton to Texas Organic — Sell cotton to Patagonia — Ship cotton to Alabama Textile

Hash-block — *Validate-block* — *Add to chain*

more than financial
all transactions recorded

Buy cotton from ABC — Buy cotton from Texas Organic — Receive cotton from Texas

Texas Organic can give Patagonia rights to see ABC, but not dollar amounts

Patagonia can have limited rights to see the entire supply chain
Texas Organic does not have to share price paid to ABC, just that ABC provided cotton

Sell cotton to Canada Goose
For this to work well, the entire outdoor industry will need to share a ledger

Why? They share a supply chain and customer base

Buy cotton from ABC

Patagonia competitors use the same chain

Patagonia could create their own chain
But ABC would need to update multiple chains

Patagonia chain?
Canada Goose chain?
Arc'teryx chain?
Marmot chain?

ABC Farm would go nuts!

Patagonia jacket loaded into trusted marketplace
description
materials
price
uses
...

who made each jacket

D

Amazon is #3 in ad revenue
Google #1 and Facebook #2

Plan on spending 52+ cost per click for keyword "winter jacket" (whether purchased or not)

10-20% conversion rate (click on product) 10 times higher than market average → *taking revenue from highly relevant products taking revenue away from highly rated products*

traditional display ad banners
- headline search - sponsored brands
product display ads - appear anywhere
sponsored products - inline with other results video ads

do a search on tent in amazon

Amazon Essentials
Our Brand
Amazon Essentials Men's Lightweight Wat...
$42.90 prime
4.7 out of 5 stars 299

Sports & Outdoors: Outdoor Recreation: Camping & Hiking: Tents

Showing results in Sports & Outdoors. View instead results in all Departments.

Amazon Basics
Our Brand

AmazonBasics Tent
$67.74 - $89.99 prime
4.3 out of 5 stars 1,127

#1 result even though it only has 8 reviews!

we give our data away for free, telling amazon(basics) the best products to make to dominate the market

Merchant's compete for Buy Now Box (90% of sales) low cost efficiency, high volume, good reviews needed

$216.00
& FREE Returns
FREE Delivery by Friday, Jan. 4
Details
In stock on January 2, 2019.
Order it now.
Ships from and sold by Amazon.com.
Fulfilled by Amazon. Gift-wrap available.
Qty: 1
Add to Cart
Buy Now
Secure transaction
Ships from Amazon.com
Sold by The Jackson Family Clothing & Fashion Store
Rent 24 hours (Exit date: ...)
Turn on 1-Click ordering for this browser

Is this an authorized reseller? Or just someone in a garage?

86% total reviews, but only 54 in the last 12 months

If amazon is selling the same product, they almost always win the Buy Box

Very rare to choose from "other sellers"

msrp? minimum price? authorized vendor? your problem, not amazon's

Amazon's Choice for a search on "patagonia mens" is a marmot product

jacket from an appliance store?

selling private label products is a conflict of interest have full control of reviews and where appears in search

product relevance no longer matters

billionaire

no more facebook profiling from user updates
no more amazon profiting from user reviews

Eliminating Amazon.com

"Amazon sets its retail prices independently and believes in delivering the best possible value to our customers"
Amazon can ignore MAP (minimum advertised price) policy - death spiral of discounting

no checks and balances always listening and collecting data

classic central authority behavior
lock-in customers, lock-out competitors — *If you don't like it, then leave the platform* / *but remember 66% of all product searches originate on amazon*

Sell to Amazon
sell your inventory to amazon at wholesale prices
making full retail margins - or discounting for volume

edi is used to transmit product information to amazon
walmart uses edi to communicate with all it's suppliers

moving from edi to blockchain would not be that hard
edi could stay in place for suppliers, shift to blockchain

Sell on Amazon

Amazon can mine all jacket sales data (every brand) and use it to make knockoffs (pick off hot products) sell Amazonbasics at a loss to buy markets/share

100MM prime members, all looking for 2 day (FBA) shipping

Fulfillment by Amazon
30% + of Amazon sales

Fulfillment by Merchant
prime 2 day shipping drives revenue
will rarely/never get the buy box
still pay 17% referral fee

receive/store inventory
handle orders
pick, pack and ship
customer returns

- Referral fees — *% of item price for selling your product* — *6% to 25% - average ~17% for clothing*
- Fulfillment fees — *cost to pick, pack and ship based on product size and weight*
- Storage fees — *$0.69 per cubic foot (Jan-Sept) $2.40 per cubic foot (Oct-Dec)*
- Long-term storage fee — *$6.90 per cubic foot (> 365 days)*

+ cost to ship products to amazon centers
expect ~33% in
+
if product returned amazon keeps 20% of referral fee
+ advertising
> $2 everytime someone clicks on your jacket link (whether buy or not)

$64 million products (1/2018)
added 208 million in 2017 alone

85% of shoppers trust online reviews as much as personal recommendations
can review on amazon even if you did not purchase it on amazon

Customer reviews: 4.4 out of 5 stars 4,444 ratings
5 star 76%
4 star 14%
3 star 5%
2 star 2%
1 star 3%
Review this product
Share your thoughts with other customers
Write a customer review

Showing 1-8 of 4,444 reviews
Sort by: Top reviews | Filter by: All stars | All reviewers | All review types | All formats | All dates

Sorry, no review match your current selections.
Hiking & Camping Lady Mary - Chuck Jones

2,372 5 star reviews on amazon
not a single one is from a verified buyer (purchased on amazon)

algos to catch cheaters not working

amazon has sued over 1,000 sellers

can also send people enough money to purchase product in exchange for review

even worse, can buy reviews (as obvious fakes) for competitor products
also catches fake reviews and bans merchant — competitor eliminated!

Neptune Mountaineering. since 1965

no way small retailers can beat amazon
not enough inventory space
not enough product selection
will wait 2 days for best price/selection
amazon is killing retail

keep only 1 of everything try on, but buy online
product arrives in 2 days

gets a referral fee for making the sale

Decentralized Benefits
unit cost - can offer products at low cost
asymmetric information - no manipulation
agency conflicts - merchant buyer aligned
safety - reduce risk of knockoff products
search costs - easy to find any product
latency - each merchant handles shipping

Decentralized Autonomous Organization

no venture capitalists can sell tokens to startup or industry can fund

trust computers and math more than people

anyone who uses marketplace is an investor there is no central authority to invest in

industrial revolution ignored → *profit from environment at all costs*

(Multi) Value Exchange Protocol

token economism

- Social impact credits — *datafication of intangibles much more than currency alone drives a services economy*
- Customer loyalty credits
- Carbon accounting credits

tokens are generic, fungible and programmable

social → *a token cannot be used to buy a blood diamond*
natural
cultural → *sellers who show supply chain will sell more products reviewers can earn tokens for posting thoughtful reviews*

this is a functioning ecosystem

Consortium
Arc'teryx
Black Diamond
La Sportiva
MSR
Marmmut
Marmot
Mountain Hardwear
Osprey
Outdoor Research
Patagonia
Rab
Scarpa
etc...

Equity Token Offering
same rights as a shareholder
equity-like rights for manufacturers
decide governance and permissions
leave consortium, give back equity

no venture capital needed no employees

Initial Coin Offering (ICO)

Governments will not be incented to finance blockchain research and innovations
cannot regulate technology so will try to regulate users

hard for nation state to regulate U.S. responsible for a lot of basic research but hurts their "central" authority "here"

nation states can't win users will just move to another blockchain you can't turn off the internet

will need recourse for fraud → *smart contract where every vendor puts money in escrow buyer is made whole via fund (first by fraudulent vendor) vendor is taken off marketplace*

organized manipulation is big business