cryptaur

Bye-Bye, Mr. Middleman

Social Graph Paper
Draft V5

cryptaur

ABSTRACT

The intention of the consumer focussed Cryptaur platforms is to amalgamate, organize, and curate products for the users to promote positive consumer experience. Current consumer platforms are paid by advertisers to present a product to a user, and that user makes the decision to purchase the product based on a variety of information. This information includes user reviews, word of mouth recommendations from trusted sources, and more.

The parallel explosion of e-commerce and social media has dramatically transformed how people interact with technology. Yet, no platform has managed successfully to combine the power of social media with commerce in a frictionless environment. Social media platforms are becoming flooded with ads, and e-commerce site carry reviews that do not represent the potential buyer's true sources of influence. This system is fraught with problems. Marketing

Marketing companies are ineffective curators of products for they are motivated by profit, and current review systems suffer from multifaceted biases that encourage inflated ratings.

While social media brings a greater opportunity for people to leverage their social connections to make better informed purchasing decisions, the social influence is use for the profit the social media platforms themselves, and not of the users who create the value of these platforms.

We introduce Cryptaur, a new consumer platform. Crypaur introduces a curation model that allows for products to be displayed based on the influence of a given user's social network. Cryptaur's review system eliminates biases that skew results. Finally, Cryptaur introduces the Contribution Engine: a system that rewards the influence of users who grow and maintain the network.

Using blockchain technology, Cryptaur allows for the first time for purchasing decisions to be made based on fully transparent information from the buyer's circle of influence – their social networks. Our technology connects providers and buyers through peer influence. Inspired by the Three Degrees of Influence Theory that an individual's influence extends beyond his direct network to three degrees of separation, the Cryptaur platform connects people and models their social influence to facilitate transparent buying decisions.

cryptaur

cryptaur.com

CONTEXT: The State of Consumer Trust

Marketers and advertisers heavily rely on their power to influence the perceived value of their products and services to convince consumers to consume. Consumers use available information to weight the cost-benefit of an action, and since this information is often paid for by the providers for the benefit of their P&L, the consumer is basing purchasing decisions on information that is not in their own personal interest. In fact, according to Nielsen's Trust in Advertising Report, only 70% of people trust company website information, and 56% trust the email information of the emails the signed-up for. Traditional advertising (TV, newspaper, etc.) is trusted by only 54 to 63% of consumers, while trust in online advertising mediums goes from 36% to 48%[1].

Product reviews are slowly losing the trust of consumers. In 2015, Neilson reported a 4% decrease in online review trust, with only 66% of consumers trusting opinions posted online[2].

Current review systems are mostly failing at providing effective information for two main reasons: paid or false reviews, and biased reviews[1].

Paid or false reviews are reviewed that aimed at promoting a product the same way traditional advertising would, disguised in the form of a user sharing an experience. They can exist because there is no consequence for posting false information.

For reviews and ratings that are not paid or misrepresented, the risk of reviewer bias remains.We can observe this bias in the overwhelming positive ratings observed in sharing economy or peer-to-peer platforms, where the rating spread shows a hockey stick graph, and every provider seems to earn a 4.8-star rating[2]!

This behavior could be explained by two main social behaviors: reciprocity and proximity.

Reciprocity: Sharing economy and peer-to-peer platforms involve a two-way rating of the provider and the consumer. A consumer providing an honest bad rating runs the risk of impacting his own rating as a form of retaliation from the provider, while providing a positive review is likely to reciprocate a positive review from the provider. There are therefore consequences to negative reviews, leading to inflated ratings.

Proximity: In a sharing economy and peer-to-peer platform, consumers interact directly with the providers, creating a form of social link. In opposition, the future audience of the review or rating left by the consumer are anonymous to the user. The social distance is therefore closer between the consumer and the provider than between the consumer and the future consumers.

1. http://www.nielsen.com/content/dam/nielsenglobal/apac/docs/reports/2015/nielsen-global-trust-in-advertising-report-september-2015.pdf
2. http://tomslee.net/2013/09/some-obvious-things-about-internet-reputation-systems.html

CONTEXT: Using blockchain to improve consumer trust

Cryptaur's technology empowers better consumer choices by arming consumers with information that can be trusted, because it comes from either :
a) A legitimate neutral source that has no economic interest in the transaction.
b) A known source, such as a friend or family member, who has the consumer's best interests at heart.

Blockchain technology allows for the immutable storage of data. Cryptaur leverages this opportunity to provide fully transparent information to its users. This information includes volumes of sales, returns or complaints, previous buyers and repeat customers, etc. Because each transaction recorded on the blockchain is verified by an independent public, the consumer can trust the accuracy and validity of the quantitative information of each product, service, or provider.

The Cryptaur community is formed by networks of connected users, with each user representing a node in the Cryptaur ecosystem. Networks tend to form clusters, defined as a collection of individuals with dense connection patterns internally, and sparse connections externally. These clusters form around common characteristics, such as family, location, common interests or hobbies, shared life experiences, etc. and tend to be plastic – they evolve and reshape as individuals themselves evolve.

This clustering allows us to safely assume that individuals that are socially connected within a cluster have more similar tastes and interests than individuals outside of the cluster. This assumption allows us to use the connections between each user to curate products and services for the users. Rather than being exposed to advertisement or paid product placement to influence their commercial decisions, users benefit from a curation based on their network of connections.

Prof. Nicholas Christakis and James Fowler published in 2007 their theory of Three Degrees of Influence, which states that: "Everything we do or say tends to ripple through our network, having an impact on our friends (one degree), our friends' friends (two degrees), and even our friends' friends' friends (three degrees). Our influence gradually dissipates and ceases to have a noticeable effect on people beyond the social frontier that lies at three degrees of separation".

Cryptaur uses connections spanning multiple degrees of social separation to display to users the products and services purchased and reviewed by their extended network. This allows users to trust the information they access, since this information comes from known, identifiable, and trusted sources. By doing so, we also address false or biased reviews. A Cryptaur user can only review a product or service after the verified purchase of this

5. http://www.nielsen.com/content/dam/nielsenglobal/apac/docs/reports/2015/nielsen-global-trust-in-advertising-report-september-2015.pdf
6. Nicholas A. Christakis and James H. Fowler, The Surprising Power of Our Social Networks and How They Shape Our Lives , Little, Brown, 2009

cryptaur

cryptaur.com

CONTEXT: Using Blockchain to Improve Consumer Trust

The behavior of one Cryptaur user explicitly impacts the purchasing decisions of his direct and extended connections. For example, a user of a current ride-sharing app who has an average experience with a driver could be tempted to leave a positive review due to the aforementioned biases. However, a ride-sharing app on the Cryptaur ecosystem would make him unlikely to leave a biased review if there is a risk to negatively impact someone in his family or circle of friends.

By leveraging technology to model social behavior and hardcode incentives into the network, we encourage each user of the Cryptaur ecosystem to contribute to a better customer experience for the Cryptaur community.

...we encourage each user of the Cryptaur ecosystem to contribute to a better customer experience for the Cryptaur community.

cryptaur

WAYS TO CONTRIBUTE

Cryptaur incentivizes the measurable contribution of the direct and indirect actors involved in a transaction within the Cryptaur ecosystem. Users are rewarded for five different types of contributions to the ecosystem:

Invite

Customer acquisition remains a key priority and a costly challenge for most companies. Referrals have proven to be an effective way for start-ups to quickly expand their user base. Dropbox grew their user base from 100,000 to 4,000,000 in 15 months after implementing their referral system. AirBnB tripled their daily bookings following their “refer a friend” feature[7].

To encourage Cryptaur users to refer friends, they are rewarded Cryptaur tokens based on the future sales and purchases of the individuals they invited to the Cryptaur community. This allows us to provide an attractive long-term incentive to users to grow the community, at no cost.

Purchase

The capital expenditure of a buyer, whether in fiat or in crypto currency, is the contribution which initiates the issuance of Cryptaur tokens. While many blockchain platforms use mining protocols to issue tokens for maintaining the network, Cryptaur’s protocol issues token in response to a financial transaction between a buyer and a provider. The purchase of a product or service is a multifaceted contribution to the network; the spending of capital contributes to the growth of the network, as well as serving as a symbol of a user’s interest in the product or service to assist in their community’s product curation.

Promote

Individuals may actively contribute to a purchase by referring a product or service to their network, whether within the Cryptaur ecosystem or through other social channels. According to Milgram’s popular Small World Theory8 and further experiments in sociometry, a given individual Is connected to anyone in the world by six degrees of separation or less. In the Cryptaur ecosystem, this translates into a user’s promotional reach to potentially impact anyone on the planet!

cryptaur

cryptaur.com

WAYS TO CONTRIBUTE

Influence

Following the delivery of a product or service, a buyer has the ability to share a positive or negative review in the Cryptaur platform. This evaluation contributes to the ecosystem by driving better purchasing decisions in the buyer's network, and encouraging the success of high quality providers.

Based on the theory of Three Degrees of Influence, the behavior of one individual has a ripple effect spreading through the network beyond the first degree of separation. In a model where each user has only 10 unique connections, one single product recommendation can impact the buying behavior of 10 people on the first degree, 100 on the second degree, and 1,000 on the third degree. A single purchase has therefore a potential influence on 1,110 individuals.

Connect

Through their social connections, individuals contribute to the ecosystem by linking potential buyers with reviews from previous buyers, acting as a trusted intermediate. While this contribution is passive, it remains essential, for it links individuals that have the potential to influence each other.

CONTRIBUTION ENGINE: A Behavior-Driven Reward

In order to drive user adoption and retention in a frictionless, social commerce based economy, Cryptaur's Contribution Engine algorithm is designed to reward the direct and indirect actors impacting a transaction on the platform, in any of the five ways described in the previous section.

For each transaction on the platform, the smart contract issues a number of tokens calculated by the amount of the transaction and the emission rate at the time of the transaction.

The Cryptaur Contribution Engine is akin to a token economy system, i.e. an operant mechanism applied within a group where desired behaviors are rewarded with points or tokens that can be traded for a desirable item or benefit[9]. Here, the desired behavior is for users to be trusted influencers of commerce. From that behavior, we created a measure of impact and trust, and a reward system in the form of the Contribution Engine algorithm.

In creating the algorithm, we focused on delivering a reward mechanism that would:

1) Be attractive for the users in order to drive the desired network effect

2) Address potential manipulations of the ecosystem for profit

3) Fairly assess and reward the relative contribution of each actor of a given transaction

cryptaur

cryptaur.com

CONTRIBUTION ENGINE: A Behavior-Driven Reward

Encourage Adoption Through Incentives

The Contribution Engine is an extrinsic reward for users to adopt and grow the Cryptaur ecosystem. As opposed to mining, where reward is allocated to one or few external contributors competing with each other, the Cryptaur rewards are distributed among users involved in a transaction, inclusive of even the smallest contribution and scalable to an unlimited number of people. The algorithm gives opportunity to all users to contribute through their influence and their connections, and assigns reward among the contributors based on their impact and their reputation index.

While rewarding a behavior definitely drives positive reinforcement, the interval and ratios of the rewards impact how quickly the behavior is adopted (response rate), and how fast the behavior would disappear (extinction rate). Research on Operant Conditioning shows that variable ratios (number of times a certain behavior is rewarded, for example with gambling) and variable intervals (time passed between the behavior and the reward) produce the fastest response rate and slowest extinction rate . In the case of Cryptaur, users have the chance to receive a reward 10 each time they influence a contribution, but have no way of predicting how soon or how often their influence will generate a reward.

Rep System to Address Potential manipulations

Any economic incentive runs the risk of being manipulated by individuals or groups in order to profit unfairly. Within the Cryptaur ecosystem, it could seem tempting to leave only positive product reviews, or even promote products of poor quality, in order to earn more rewards. Another attack vector could be to create network connections with strangers in order to maximize the occurrence of rewards, therefore creating an artificial network that does not reflect one's true social influence.

The only way to make a group behave fairly and transparently is to make it more profitable to behave equitably than inequitably. To address potential malicious manipulations, we created a Reputation Index, a scoring system that reflects the degree of trust earned by users and impacts the reward allocation between the contributors.

CONTRIBUTION ENGINE: A Behavior-Driven Reward

Trust Score

This Reputation Index is public to the community and acts as a badge of trust. Not only does it influence how users are perceived by the community and by their network, but greatly impacts the CPT reward they receive through the Contribution Engine.

The Reputation Index represents the combined impact of four behavior driven indexes:

The single most important factor in the reputation index is the transparency and honesty of users in their product recommendation. The Trust Score measures the correlation between a user's reviews and the reviews shared by subsequent buyers.

Different factors favor independent and non-tainted reviews in the calculation of the trust score.

Firstly, the social distance between the user and their peers who will benefit from the reviews is short. In many reputation systems, the reviewer is closer to the establishment reviewed than toNthe reader. As previously mentioned, shared economy apps such as AirBnB and Uber, users interact directly with their host or driver, but do not know the future users who will use their rating. As a result, the ratings are extremely positive. The fear of retaliation encourages consistent high ratings, regardless of the real quality of the service delivered. Ratings that provide more social distance between the reviewer and the provider and do not involve potential retaliation from the provider or provider, such as Netflix reviews, have a much more distributed rating . In the Cryptaur review system, providers cannot retaliate as a result of a bad review, since providers cannot review their customers. The consequences of leaving a biased or tainted review directly impacts people close to the user, encouraging users to be transparent and honest in other not to hinder their peers.

Secondly, by only considering the ten reviews that happen after a purchase, we reduce the temptation to simply agree with the majority of the reviews left by previous buyers, since these previous reviews are not included in the consensus calculation. This prevents malicious actors from attempting to leave fake reviews for products, informed by the previous set of reviews.

CONTRIBUTION ENGINE: A Behavior-Driven Reward

Product	"Would you recommend this product to your network?"	Subsequent YES answers in network	Subsequent NO answers in network
A	YES	**9**	1
B	NO	2	**6**
C	YES	**2**	0
Trust score = consensus answers/total answers = 17/20 = 0.85			

Activity Score

Active Cryptaur users are more likely to be trustworthy. The Activity Score A of a user u is a velocity measure of the sum of his of personal purchases (P u) and direct referrals conversions (D u), representing the level of activity (or displacement) of a user over a given period of time.

$$A_u = (P_u + D_u)$$

Promotion Score

The Promotion Score P reflects the ripple effect of a user's activities on 3 degrees of separation (d 1 , d 2 , d 3), as a weighted average of the network's Activity Score. It reflects how the action of a user impacted the level of activity in the network. The Promotion Score gives more weight to the first degree of separation, where the influence is strongest, and less to the third degree, where the influence is diluted.

$$P_u = 0.57 * \square(A_{d1}) + 0.29 * \square(A_{d2}) + 0.14* \square(A_{d3})$$

A high Promotion Score shows that a user's influence is targeted to the right connections, for promoting a product to the wrong audience will not generate further referrals.

CONTRIBUTION ENGINE: A Behavior-Driven Reward

Staking Score

The Cryptaur wallet balance shows the user's commitment to the ecosystem: high levels of involvement in the platform will result in higher wallet balances on average. A user with a high Cryptaur token balance is more likely to be committed to the long term success and growth of the ecosystem, and therefore less likely to abuse its use, since it would negatively impact his or her holdings.

Consequently, the simple fact of retaining Cryptaur tokens rather than immediately selling them on exchanges reduce the available supply, and mechanically supports the market value of the Cryptaur token, up to the point where the market price would be equal or above the perceived value of the contribution. The Staking Score is extracted from the ratio between the user's Cryptaur token balance and the tokens issued to the user through Contribution Engine over a period of one year, up to a maximum ratio of 1.

CONTRIBUTION ENGINE: A Behavior-Driven Reward

Fair and Equitable Reward Distribution

The fair perception of the reward allocation between the contributors is key to maintain engagement in the platform. In organizational psychology, the Equity Theory measures fairness by comparing the ratio of contributions (or inputs) and benefits (or rewards) for each person. It does not mean that everyone has to be paid equally, but rather equitably in relationship to their individual contribution and impact.

Applying the Equity Theory to the Cryptaur ecosystem, individuals perceiving that they receive too little as compared to their peers would likely rebalance their inputs/rewards ratio by abandoning the platform. Individuals perceiving that they receive too much could either increase their efforts, or attribute little value to the reward. For these reasons, a fair and equitable distribution of rewards is at the center of the Contribution Engine.

To sustain a fair perception of the rewards, the Cryptaur token allocation is modeled on the weighted influence - or inputs - of the actors of a transaction, based on:
- Their active or passive participation in the transaction (type of contribution)
- Their influence on the proximity to the transaction (degrees of separation)
- Their relative trust within the group of actors of the transaction (Reputation Index)

Type of contribution
Proof of contribution separates passive and active influence into 5 different rewards for the 5 different types of actors in the Contribution: the sponsor, the buyer, the promoters, the connectors. Actors who play multiple roles in a transaction receive multiple rewards.

 The sponsor is the individual who invited the buyer or the provider to join cryptaur. Each user or provider only has one sponsor, and this connection is immutable.

 The buyer is the individual purchasing the product on the Cryptaur platform

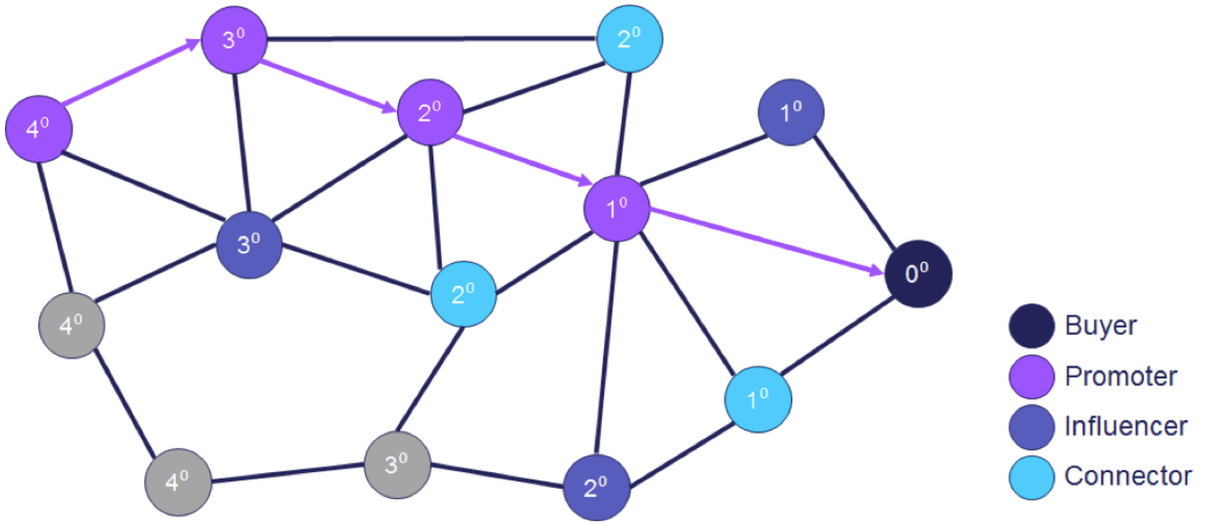
 The promoter is the individual whose referral generated the purchase from the buyer, Atransaction on Cryptaur can happen with or without a promoter

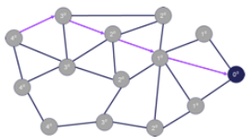
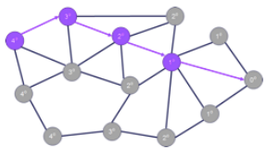
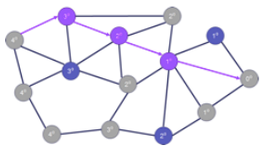
 The influencers are individuals who purchased the product or brand and left a positive or negative review on the Cryptaur platform

 The connectors are individuals in the network of the buyer, separated from the buyer by various degrees

CONTRIBUTION ENGINE: A Behavior-Driven Reward

Example of network actors in Contribution Engine



	Buyer reward	**Promoter reward**	**Influencer reward**	**Connector reward**
When	Issued each time a sale is generated on the platform	Issued only when a sale resulted from referral	Issued each time a sale is generated on the platform	Issued each time a sale is generated on the platform
Who	Issued to the buyer	Issued to chain of promoters for up to 6 degrees of separation from the buyer	Issued to individuals who purchased and reviewed, within 3 degrees of separation from the buyer	Issued among all individuals who helped connecting the buyer with influencers
Ex:				

cryptaur

cryptaur.com

CONTRIBUTION ENGINE: A Behavior-Driven Reward

Sponsor reward
This reward allocates a portion of the tokens issued for the transaction to the individual who invited the buyer or the provider to join the platform. This incentive rewards a user's contribution to grow the network through customer and provider acquisition. In order to drive growth in the early days of the Cryptaur ecosystem, the proportion of the tokens allocated to sponsor reward is larger at the beginning, and diminishes over time as the user base grows.

Buyer reward
The buyer reward is a fixed reward distributed akin to a cash-back or a loyalty program. This reward encourages users to transact on the Cryptaur dApps.

Promoter reward
The promoter reward is distributed to the individual's whose referral triggered the commercial transaction. The social graph tracks the chain of promotion such that if A refers a product to B, and consequently B refers the product to C, then C refers the same to D and so on, A would be rewarded for the ripple effect his or her referral would have triggered down the chain of nodes. This reward progressively decreases as the chain of referrals increases in social distance from A.

Influencer reward
As opposed to the Promoter reward, allocated to a single individual, and limited by the degree of separation, the influencer reward is inclusive of all individuals that reviewed the product, within the sphere of influence of the buyer.

Connector reward
The connector reward is distributed to nodes who connect buyers with influencers or products, i.e. all intermediary nodes between a buyer and anyone who produced a review, within the sphere of influence of the buyer.

Degrees of separation
The social graph looks at the shortest chain of influence between the buyer and any individual in the network to determine the degree of separation. The Contribution Engine rewards individuals that are closest to the transaction more than individuals further away from the transaction, or separated by more degrees.

For the passive contribution of the Influencer and the Connector reward, the reward distribution spreads to three degrees of separation. According to the theory of Three Degree of Influence, the influence of the first degrees is often approximately twice the influence of the second degree, and the second degree twice the influence of the third.

Approx. % increase in probability that the ego has the trait of interest of the alter.

cryptaur

CONTRIBUTION ENGINE: A Behavior-Driven Reward

	Social distance		
Behavioral and affective traits	1 degree	2 degrees	3 degrees
Obesity	45%	20%	10%
Smoking	149%	41%	29%
<7 Hrs of sleep	29%	17%	8%
Heavy Drinking	120%	80%	15%
Marijuana use	190%	88%	38%
Happiness	15%	10%	6%
Loneliness	51%	25%	17%

Source: Nicholas A. Christakis and James H. Fowler, Social Contagion Theory: Examining Dynamic Social Networks and Human Behavior , http://jhfowler.ucsd.edu/examining_dynamic_social_networks.pdf

cryptaur

cryptaur.com

CONTRIBUTION ENGINE: A Behavior-Driven Reward

Based on the model on the previous page, the Influencer and Connector rewards are distributed so that individuals at first degree of separation would receive twice the reward of individuals at the second degree, and four times the reward of the third degree. This system implies that, as the network grows, a given user's chance of getting a reward would be progressively diluted. Within a large network, the reward per transaction might be more sparse. However, the frequency of transaction will be higher, therefore rebalancing the input/reward ratio.

While passive influence is limited to three degrees, the Promoter reward extends to six degrees of separation. As opposed to peer influence that gets diluted after three degrees, the contribution of the promoter has a ripple effect on further promoters, who in turn influence and onboard more promoters, creating virality of a product.
The distribution of the Promoter reward (P) among the chain of promoter is inversely proportional to the degrees of separation (d) on six degrees of separation, so that the reward (R) of a user u is:

$$R_u = P / 2.45^{d}$$

Reputation Index
The Reputation Index brings an element of gamification through competition between the users sharing the Influencer and Connector rewards. The Contribution Engine calculates the number of tokens to be distributed among each degree of separation. The chance of winning the tokens between the individuals of this degree of separation is proportional to their Reputation Index, so that users with the highest reputation will be rewarded more often.

The probability (P) of winning the reward for a user u is equivalent to the proportion of his Reputation Index RI over the sum of the Reputation Indexes of all connections within the same degree of separation d .

$$P_u = (RI_u / \Sigma RI\ d\ )$$

CONTRIBUTION ENGINE: A Behavior-Driven Reward

For example, if the reward is to be distributed among 5 influencers at the first degree of separation from the buyer:

User	Reputation Index	$RI_u / \sum RI_d$	Probability of reward
A	55	0.116	11.6%
B	287	0.604	60.4%
C	121	0.255	25.5%
D	0	0	0%
E	12	0.025	2.5%
Total	475	1	100%

Users can play multiple roles in a single transaction and win multiple rewards.

cryptaur

BENEFITS FOR THE WHOLE ECOSYSTEM

Providers

Cryptaur providers benefit from a new direct sales channel where the Cryptaur ecosystem is the only intermediary between the buyer and the seller.

Providers can structure sales strategies within Cryptaur's ecosystem, building large sales campaign with virtually zero customer acquisition costs. The Cryptaur ecosystem relies on consumers, and not marketing dollars, to promote products. providers can reward the promoters through fiat currency rewards, or simply rely on the native Contribution Engine rewards of the platform to incentivize their consumers and promoters.

Once a product campaign is launched, network effects and virality, fueled by the Contribution Engine incentives, can be theoretically sustained indefinitely by the network, without requiring extensive promotional efforts or cost from the provider.

Operating on Cryptaur allows providers and Brands to read key product indicators right from the blockchain: activity, utilization, quality, retention, user acquisition costs, trends, etc.

Consumer

E-commerce in its currents format is a fragmented, centralised experience, dominated by large retailers and distributors offering little reward besides the acquisition of the products and services purchased. Most often, consumers are bombarded with advertising or paid product recommendations. To assess a product, they must rely on reviews from unknown sources or on biased information from the sellers, and/or rely on return/exchange policies.

In opposition, Cryptaur offers an ad-free purchasing experience, where the only sources of influence are reviews from trusted users in the buyer's network and real time data on the product's performance. The Cryptaur shopping experience is entirely transparent, therefore reducing the odds of purchasing a product of poor quality.

cryptaur

BENEFITS FOR THE WHOLE ECOSYSTEM

Promoter

One's successful efforts to promote a product or service is rewarded through the Contribution Engine algorithm, in addition to the optional fiat rewards offered by some providers. A career promoter can earn meaningful revenues by building a customer base, and by identifying other promoters in their network that will support the sale of a product. This means that direct sales efforts, as well as team building efforts, are equally important.

The platform allows any motivated individuals to build their own affiliate organizations, providing the infrastructure to start and scale a business, rewarding successful sales instantly. Cryptaur empowers any individual with entrepreneurial motivation with an on-demand, ready to operate infrastructure.

Promoters also benefit from the transparency of the platform, as potential buyers assess products based on sales data and reviews, thereby giving promoters tools to better select and market products.

cryptaur

CONCLUSION

In this whitepaper, we have explored how current systems for curating products and informing consumer decision are flawed, and misalign consumer incentives. Curated products are shown at the behest of advertising dollars, rather than consumer interest.

We have introduced Cryptaur: a platform that utilizes social connections to curate products, and produce the most relevant information to inform the consumer's choice of product for purchase. Additionally, we introduced Contribution Engine: an incentive system that encourages the growth, spread, and robustness of the platform, while also accounting for potentially malicious actors.

We have shown how this system positively impacts every type of actor in a consumer ecosystem; Cryptaur empowers providers to better market and sell their products, and empowers consumers with the ability to not only browse the products most relevant to them, but to earn rewards through engaging with the network.

We consider these elements as key to create a fair shared economy where the actors of transactions benefit from decentralized technology to conduct trusted commercial transaction. Each dApp on the Cryptaur platform will gain from the trust built among the Cryptaur community, creating a virtuous ecosystem that will transcend current economic models for the benefit of consumers and providers.

cryptaur

cryptaur.com

REFERENCES

Christakis, N.A., and Fowler, J.H.: Connected: The surprising power of our social networks and how they shape our lives, Hachette Digital, Inc. (2009)

Jie Tang and Juanzi Li, Semantic Mining of Social Networks, Morgan & Claypool Publishers, 2015

David Easley and Jon Kleinberg, Networks, Crowds, and Markets: Reasoning about a Highly Connected World, Cambridge University Press, 2010.

Tom Lee, What's Yours is Mine: Against the Sharing Economy. OR book, 2015

Charles Zastrow and Karen Kirst-Ashman, Understanding Human Behavior and the Social Environment. Cengage Learning, Jun 6, 2006

Jeffrey Travers and Stanley Milgram, An Experimental Study of the Small World Problem Sociometry, Vol. 32, No. 4 (Dec., 1969), American Sociological Association, http://www.jstor.org/stable/2786545

Jure Leskovec, Lada A. Adamic and Bernardo A. Huberman, The Dynamics of Viral Marketing, http://www.cs.cmu.edu/~jure/pubs/viral-tweb.pdf , May 2007

Tiffany Fox, Three Degrees of Influence: The Impact of Social Networks, http://ucsdnews.ucsd.edu/archive/newsrel/general/06-09SocialNetworks.asp , June 22, 2009

Scott Schuhand and Oz Shy, U.S. Consumers' Adoption and Use of Bitcoin and Other Virtual Currencies, https://www.dnb.nl/en/binaries/Consumer%20VC%20paper_DNB_FINAL_corrected_tcm47-344530.pdf?2016122916 May 6, 2016

Saul McLeod, Skinner - Operant Conditioning, https://www.simplypsychology.org/operant-conditioning.html , 2015

William Mougayar, The business Blockchain http://thebusinessblockchain.com/ , 2016

cryptaur

cryptaur.com

REFERENCES

Jeremy Epstein, Erik Voohres, Jeff Garzik, Roger Ver, Ryan Shea, Juan Benet, Blockchain in the mainstream: when will everyone know? https://www.neverstopmarketing.com/blockchainebook/ , 2016

Andrei Hagiu, Strategic Decisions for Multisided Platforms. http://sloanreview.mit.edu/article/strategic-decisions-for-multisided-platforms/ , December 2013.

Ry Sullivan, Collaborators, Counterparties, and Competitors on Multi-sided Networks . http://www.onlineeconomy.org/collaborators-counterparties-and-competitors-on-multi-sided-networks/ , November 2015

Mei Lin, Ruhai Wu, Wen Zhou, Endogenous Network Effects, Platform Pricing and Market Liquidity . http://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=3219&context=sis_research , Singapore Management University, October 2015

Sean Silverthorne, New Research Explores Multi-Sided Markets . http://hbswk.hbs.edu/item/new-research-explores-multi-sided-markets , Harvard Business School, March 2006

Andrei Hagiu and Julian Wright, Multi-Sided platforms. http://www.hbs.edu/research/pdf/12-024.pdf , Harvard Working Paper, 2011

Sinan Aral, Lev Muchnik, and Arun Sundararajana, Distinguishing influence-based contagion from homophily-driven diffusion in dynamic networks . https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2799846/ , NCBI, 2009

Jerry Kirkpatrick, Theory and History in Marketing . https://www.cpp.edu/~jkirkpatrick/Papers/T%26HMkt.pdf

Ilan Lobel, Evan Sadler, and Lav R. Varshney, Customer Referral Incentives and Social Media. http://pages.stern.nyu.edu/~ilobel/Referral_Incentives.pdf , 2016

Nina Mishra, Robert Schreiber, Isabelle Stanton and Robert E. Tarjan, Clustering Social Networks. http://theory.stanford.edu/~nmishra/Papers/clusteringSocialNetworks.pdf

NIELSEN, Global Trust in Advertising . http://www.nielsen.com/content/dam/nielsenglobal/apac/docs/reports/2015/nielsen-global-trust-in-advertising-report-september-2015.pdf , September 2015

Philipp Schmitt, Bernd Skiera and Christophe Van den Bulte, Do Referral Programs Increase Profits? https://faculty.wharton.upenn.edu/wp-content/uploads/2013/05/Schmitt_Skiera_VandenBulte_2013_Referrral_Programs_2.pdf , 2013