Skins betting & Blockchains: A brief overview

Prepared for GambleAware, UK

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Executive Summary:

In response to a request by the Research Committee, GambleAware has asked IROP to produce a brief paper on Skins betting & Blockchain. The purpose of the report is to provide an overview of the concept of Skins betting & Blockchain to inform the Committee as the nature, function and possible implications for gambling associated with these emergent forms of gambling.

- Skins refer to the graphic design of components used in online video games, notably virtual weapons, armour, equipment, and other aesthetic items used in first-person shooter games.
- Skins have no intrinsic value or confer any skill advantage to players. Their value resides in the capacity of the skin to personalise the aesthetic appeal of the avatar and associated components used by a player.
- Skins can be purchased, or won by betting on the outcome of an eSport event, lottery draw jackpot, casino-style game or another chance based-outcome. Skins can be won between a player and an operator, or by peer-to-peer transactions. In this capacity, skins betting can meet the operational definition of gambling.
- Skins can be exchanged for cash via third party online operators.
- Estimates are that around 3 million individuals wagered $2.3 billion worth of on skins on eSport events in 2015.
- A Google search purportedly revealed over 600,000 sites offering skins betting.
- In an unregulated environment, risks include the possibility that funds could be used to support other criminal activities and/or launder money.
- In the absence of regulatory compliance, there is no guarantee that games offered are fair and free from exploitative practices, or player knowledge of commissions paid to the operator for transactions.
- In cases of dispute or complaints, there are limited if any appeal bodies that can advocate on behalf of the player or impose penalties in case of breaches, match-fixing or exploitative practices.
- There are minimal if any age verification procedures applied to eliminate underage gambling.
- There are no requirements in an unregulated environment to adhere to responsible gambling practices or strategies such as self-assessment, signage and messaging encouraging players to gamble within affordable limits, self-exclusion options, or links to treatment services for those exhibiting addictive behaviours or related negative consequences.
- A Blockchain can be construed as *"a technology that allows people who don't know each other to trust a shared record of events"*. This shared record or ledger is distributed to all participants in a network. These records are open and transparent with mass collaboration authenticating transactions. All users can trace the providence of each transaction made.
- The Blockchain protocols effectively remove the need for a third-party intermediary such as a bank to valid transactions.
- Each transaction is recorded permanently in a Block linked to all previous transaction effectively creating a chain of blocks (hence the term, Blockchain) that traces and authenticates every transaction associated with that block.

- The architecture of the Blockchain protocols effectively prevents fraud, alteration of records, or cracking (hacking) by unauthorized users.
- By eliminating intermediaries, and establishing a secure and trusted protocol, speedy, cost effective and trusted peer-to-peer transactions are possible. The use of cryptocurrency (e.g., Bitcoin) by passes traditional payment methods through financial institutions, i.e., banks, credit cards etc.
- The open source nature of the protocol enables operators to develop Smart Contracts. These are codes that run without the requirements of external network agents, that is, the no one controls the game nor can it be taken down. Smart contracts self-execute, triggering the release of payment when certain conditions are fulfilled). This eliminates the need for an intermediary and allows peer-to-peer gambling using a smart contract code.
- Given the structure of Blockchain protocols, there is no risk that gambling products and games are offered are not fair. Consumers can verify outcomes thereby reducing the need for a regulator to verify and license operators. It may substantially reduce disreputable offshore gambling sites that do not provide fair products and pay customers, and reduce online gambling licensing organisations as these may no longer be necessary or required for consumer trust
- Blockchain It is part of a rapidly growing ecosystem of advanced technologies that will play a fundamental role in the future of commerce and society.

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1.0 Skins Betting and Gambling

1.1 What are skins?

'Skins' refer to the cosmetic appearance of certain graphic components used by players in video games, typically virtual weapons, armour, equipment, and other aesthetic items used in first-person shooter games. Players can exchange/trade or purchase these virtual items that differ in colour and graphical design from the standard item used in the game. For example, a basic design (skin) can be replaced at a cost with a more elaborate and/or colourful one.

Skins typically do not alter or afford any additional functional advantage or skill to the player in playing the game. The value of the skins, therefore, is found in its capacity to personalize a player's avatar[1] used in the game. However, some skins do provide tactical, if not technical, advantages, for example, a camouflage skin helps guns blend into a jungle environment.

The availability and demand for a skin determines its worth. Rare items are sought more often compared to those readily available, and therefore attract higher status as a collectible and consequently, cost value.

Skins can be:

(a) Used during play and exchanged with other players according to their value, or

(b) Deposited into the player's Steam account that is operated by Valve.

1.2 How are skins exchanged and purchased?

The video game Counter-Strike: Global Offensive (CS:GO) is a popular shooter game in which players can trade and purchase skins. Participating players can acquire skins by purchasing, trading, winning, receiving as part of a promotional give-away, or earning it through achieving threshold targets (e.g., kills, assists, and completing objectives). In game, skins are obtained by finding and opening "weapon cases" using keys, which can be bought from the in-game store, for around US$2.50 Unopened weapon cases can also be acquired via purchase or trade from the Steam Community Market. These are offered as somewhat of a lottery or 'lucky dip' given that the contents are not known. Users bid on open boxes without any odds provided on what may be inside, that is, the likelihood of an item of low or high value being obtained (Figure 1). Once obtained, skins can be bought or traded for on the market (Figure 2).

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[1] An avatar is the virtual representation of a person within a video game

Figure 1 CS:GO Weapon Case for sale on Steam Community Market 10-Jan-17

All transactions on the market are conducted with Steam Wallet funds[2]. A Stream account is an associated site where players can deposit and exchange/trade skins among each other. Skins can be purchased for real money on the Valve-owned site but can only be sold to other players for credit points within an in-game embedded the Steam account system. Skins can be sold with accrued credits used to purchase skins of a higher value. In this context, skins are transferred effectively in a barter type system where there is no monetary exchange or cash-out for real money. It is impossible to withdraw money from your Steam Wallet[3]. Valve maintains a limit of $500 on Steam wallet funds, and a maximum sale price of $400 for any single item.

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[2] Valve takes a 15 percent cut of all CS-GO-related purchases on the market
[3] Otherwise, Steam would qualify as a banking institution and Valve would be subject to related regulations

Figure 2 Steam Community Market for CS:GO 10-Jan-17

Subsequently, many transactions occur outside of the Steam Market. Valve's Steam API allow for third-party services to interact with player's Steam accounts. Many websites exist to facilitate this, such as CSGOShop and OPSkins (Figure 3), which allow customers to cash out funds received from skin sales to services such as PayPal. These have no price maximums. Websites use the freely available API provided by Steam to allow skins to be transferred to a third-party site external to Steam, and exchanged for cash to the value of the skin. This capacity confers a monetary value to the skins. There are enough players trading in CS:GO's virtual market to establish mean prices over long time periods[4]. Consequentially, each skin can be regarded as having monetary value and representing some level of value, analogous to a casino chip or token.

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[4] based on the number of the same item available and the demand for these
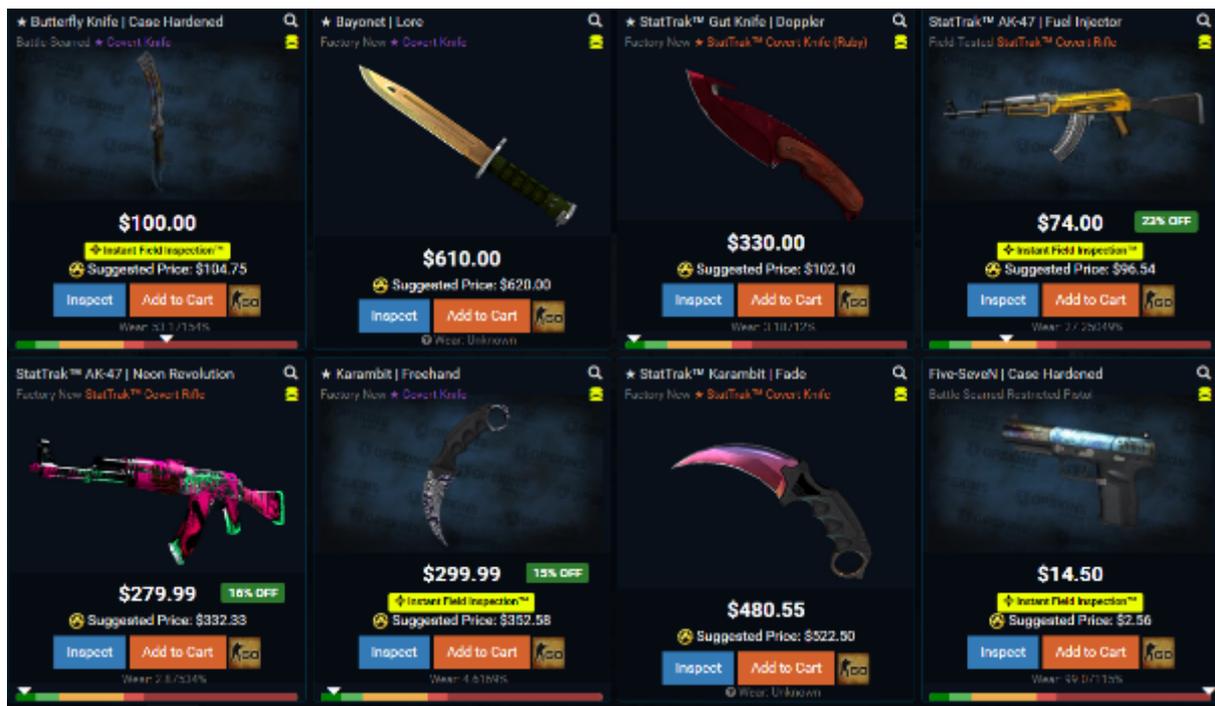
Figure 3 OPSKINS Item database 10-Jan-17

1.3 How extensive is skins betting?

The concept of skins betting appears to have emerged in 2013 when the operator of Valve introduced the system of online skins trading. Simultaneously, eSports has dramatically risen in popularity and many players are interested in betting on these events. Users can bet with skins on the outcome of eSports directly from their Steam accounts, or using secondary sites. Subsequently, numerous third-party websites have been created using Steam API to allow people to gamble using skins. Using the Steam API, skins can be transferred into an account on specific online gambling sites. These allow players to use skins as currency for gambling, that is, to bet on the outcome of events, for example eSports outcome, lottery draw jackpots, casino-style games, or skill games that contain elements of chance. Skins can be won between a player and the operator or on a peer-to-peer agreement. Players can sell skins won on the Steam Market, or via third-party websites for cash-value (e.g., deposits into a PayPal account).

In addition to betting on eSports, a popular form of skins betting is public pots (Lahti, 2016), which is purely odds-based gambling with other players. Players deposit skins into a shared pot as a short time limit counts down, after which no more bets are accepted. The system randomly picks a winner, the higher the total value of the skins you bet, the greater your chance of winning the pot (akin to having more tickets in a sweepstake).

Within a timeframe of two years, the Eilers and Krejcik research agency reported that eSports skins betting participation rates increased approximately 1,500% with around 3 million individuals wagering $2.3 billion worth of on skins on eSport events in 2015 (Brustein & Nevy-Williams, 2016). Grove (2016) estimated that the global worth of skins across all products reached $7.4 billion in 2016, and accounted for 93% of eSports total gambling handle. Fifteen sites were conjectured to generate the majority of expenditure, with eSports contributing to just under half (44%), followed by Jackpot (lottery-type games) (26%), and Roulette (14%), of the expenditure. A Google search purportedly revealed over 600,000 sites offering skins betting (Edmonds, 2016). In contrast,

BetCSGO.org lists 54 different sites on which skins can be gambled on including jackpot, skill, match betting, fantasy, and skill gaming[5].

Valve has also made substantial revenue, estimated at over $500 million in July 2016, associated with fees levied on transactions (Masters & Louchnikov, 2016). Valve makes 5 percent off the sale of any Steam Market sale, but 15 percent of the sale of items from Valve games like CS:GO, Dota2, and Team Fortress.

A search of web metrics for CSGOLounge.com placed its global rank as 4,296 and 154 in the games category. Total visits have substantially declined since July from over 30 million to 8.4 million. The site announced that it would no longer allow players from the United Kingdom to access the sites betting feature. CSGOLounge is the largest skin betting website in the world and is estimated to have processed more than 90 million skins in betting handle on CS:GO matches in the first half of 2016 (Green, 2016).

CS:GOBig provides indicators of betting with skins in the past 24 hours, with $347,094 won on January 10, 2017. CSGOFast.com tracked 28643 unique players on January 10, 2017 offering 7056 games and the largest win of $2433. The top ranked player had 352 wins, a total of $101156.

1.4 Is 'skins betting' 'gambling'?

The concept of gambling incorporates the following elements:

- An agreement between one or more parties.
- To stake an item of value on the outcome of an event.
- That is wholly or partly determined by chance.
- For the profit or gain of one party over the other/s.

The UK Gambling Act (2005) sets out the parameters defining the concept of gambling, defining the term under betting, gaming and participation in lotteries. These are operationally defined in section 9, section 6, and section 14 of the Act, respectively.

Where skins are traded between players purely on the basis of purchases or exchange within the site, the activity can be considered as non-gambling. Skins are not distributed according to the outcome of a chance event, or cashed in for real money. However, there are several elements of gambling associated with skins. Skins can be construed as having real value given the fact that these can be cashed-out for real money via third party operators.

The first is the mechanism of obtaining skins, through the crate and key mechanism. This operates on a variable-rate reinforcement schedule, in the same way as a slot machine. It introduces the ability to generate in-game revenue that is integrated within core game play. That is, players come across a weapons case that they pay money to purchase (profits received wholly by Valve), without knowing the contents (chance). Furthermore, players have no way of knowing the likelihood (odds) that they will obtain an item of low or high value. This is akin to playing a slot machine with no information on the odds of winning the maximum prize, or even what the possible prizes are. Unlike a slot machine, players cannot lose, all weapons cases obtain an item. A key question is whether the outcome – skins – are considered to be an item of value.

There is some precedent for preventing this mechanism within video games. In 2012, Japan's Consumer Affairs Agency ruled that this mechanism ("kompu gacha", a feature which allows players to purchase entries into multiple electronic draws to win special items) was illegal as it was in violation of advertising laws (Gainsbury, King, Delfabbro, Hing, Russell, Blaszczynski, & Derevensky,

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[5] http://betcsgo.org/ 10-Jan-2017

2015). Each draw costs money and the probabilities of winning are unknown to players. However, although banned due to misleading consumers, it was not identified as a form of gambling.

The second, and more concerning aspect is gambling with skins used for currency. In respect to skins, it can reasonably be argued that aspects of skins betting contain all the requisite characteristics that make it fall within the domain of gambling. There is an agreement between the player and one or more others to stake an item of value (skins that can ultimately be exchanged for real money), on events that are partly determined by chance (the process by which a player wins a skin; outcome of eSports event where chance plays a part, or roulette, lottery or coin toss wholly governed by chance), for the advantage or gain of one party.

Steam account rules state that "Steam Wallet funds do not constitute a personal property right, have no value outside Steam and can only be used to purchase Subscriptions and related content via Steam (including but not limited to games and other applications offered through the Steam Store, or in a Steam Subscription Marketplace) and Hardware. Steam Wallet funds have no cash value and are not exchangeable for cash."[6] Thus, claiming that betting with skins does not constitute gambling. However, by not publicly intervening, Valve allowed gambling to become an inseparable aspect of CS:GO's culture (Lahti, 2016). Furthermore, by making its API freely available, Valve were complicit in the development of third-party gambling and cash-out sites. By charging a transaction fee, Valve profited monetarily from the functioning of the sites. Valve also provided sponsored Valve links, allowing users to link their Steam accounts to third-party gambling sites.

Grove (2016) noted that in light of recent events, potential litigation and moves by Valve in mid-2016 to issue notices to around 40 third-party sites requesting cessation of their activities or closing their site, there is a need to revise the predicted level of expenditure on skins betting over the next few years. Valve's actions were in response to instructions from the Washington State Gambling Commission issued in late 2016, coupled with threats of forfeiture of assets and criminal proceedings for failure to so do (Green, 2016). The Washington State Gambling Commissioner, Chris Stearns described skins betting on sports as "a large, unregulated black market for gambling".

There have been inconsistent decisions in court rulings regarding the weight given to third-party sites offering money for virtual goods when site providing the virtual goods do not allow cash-out systems (Lahti, 2016). Courts in the UK and the Netherlands upheld decisions that virtual chips and items have monetary value and that theft of these is a violation of the law (Charif, 2011; Morgan Stanley, 2012). Legal decisions in the US have largely not awarded decisions based on secondary markets for virtual items (Lahti, 2016).

The controversies surrounding skins betting relates to:

- Its current unregulated status, allegations that it constitutes an illegal gambling business.
- Scrutiny by the UK Gambling Commission as to whether it breaches requirement to be licenced as a gambling product.
- Potential transgression of the legislation enacted in the United States of America, notably the Unlawful Internet Gambling Enforcement Act, Illegal Gambling Business Act and the Wire Act.
- Incidents of celebrities promoting but failing to disclose ownership of sites (Edmonds, 2016).

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[6] http://store.steampowered.com/subscriber_agreement/ 10-Jan-17

1.5 Who engages in skins betting?

Esports is a popular form of entertainment, although there is relatively little reliable research about the users. There is a clear majority of males in the eSports community, estimated at two-thirds. Young adults are the dominate age (24 to 27 years of age) (Zalik, 2015).

CS:GO is the fourth most popular massively multiplayer online game (MMO), although one of the most recent (released in 2012). An estimated 3 million players use the game every month with more than 250 million hours of game play (Paul, 2016). The CS:GO site ranks among the top 700 sites globally attracting around 38 million visitors. Analyses of Steam data indicate that UK players make up approximately four percent of all CS:GO players, ranking seventh out of all countries (Imgur, 2016). Dota 2 has around 15 million unique players with roughly one million players signing in each day. Estimates from 2017 indicate that CS:GO is the most popular game currently in the UK (Steamspy, 2016). To date, there is minimal if any data available on the characteristics of players in terms of socio-demographic features, degree of involvement, per capita expenditure and negative impact associated with skins betting.

1.6 What are the primary issues?

There are several significant concerns to regulators and community members regarding skins betting. In contrast to most forms of online gambling, skins betting remains unregulated and unlicensed. Therefore, sites operate under limited if any constraints increasing the risk or degree to which:

1. Operators become exposed to the possibility of allocating funds to support other criminal activities and/or launder money. There is no probity or regular compliance and monitoring checks to guarantee industry standards are met imposed on operators. This contrasts with stringent assessments and reporting procedures as required by operators in a strictly regulated market.

2. Related to the above, in the absence of regulatory compliance, there is no guarantee that games offered are fair and free from exploitative practices, or player knowledge of commissions paid to the operator for transactions. Restrictions on advertising and inducements are absent allowing operators to make misleading claims or bonus offers that are not transparent or fully explained. Probabilities (odds) associated with events (lotteries, roulette, coins) are not publicized.

   In cases of dispute or complaints, there are limited if any appeal bodies that can advocate on behalf of the player or impose penalties in case of breaches, match-fixing or exploitative practices. In essence, consumer protection is minimal.

3. Given purported high rates of underage participation in video gaming and exposure to eSports, there are minimal if any age verification procedures applied to eliminate underage gambling. Under-age players are not prevented from accessing third-party sites to cash out the value of skins. In a poll of over 10,000 players in Reddit's Global Offensive community in 2015, 42 percent of respondents said that were under the age of 18.[7]

4. There are no requirements in an unregulated environment to adhere to responsible gambling practices or strategies such as self-assessment, signage and messaging encouraging players to gamble within affordable limits, self-exclusion options, or links to

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[7]

https://www.reddit.com/r/GlobalOffensive/comments/33hudc/survey_how_old_is_the_average_csgo_player/?st=iqbaqw86&sh=fa0b0516

treatment services for those exhibiting addictive behaviours or related negative consequences. Skins betting shares characteristics with other forms of gambling that are highly associated with excessive gambling; rapid, continuous speed of play, instant feedback on outcomes, and unrestricted expenditure limits.

1.7 Summary:

Skins betting has witnessed a significant growth over a relatively short period following its introduction in 2013. Currently, skin betting operates outside any regulatory framework comparable to that imposed on online gambling industry operators. This has raised concerns about potential involvement by operators in criminal activities and money laundering, exploitative advertising and inducement offers, unfair games, underage gambling, and lack of responsible gambling and consumer protection options.

Although demonstrated to be popular, the socio-demographics of participants and the potential negative impacts of excessive skin betting behaviour remains unknown, operators are facing serious challenges from regulatory agencies. These threats, originating in allegations of illegal gambling businesses and operating without authorised licenses, have resulted in the closure of a number of third-party sites offering skins betting opportunities and cash-out facilities. The future of skins betting in its current format is under threat and falter under increasing pressure to comply with regulatory requirements.

Accordingly, the extent to which skins betting is a transient phenomenon whose popularity and level of participation will decline in response to eSports industry concerns and tightening up of licencing and regulatory requirements is yet to be determined.

1.8 References

Brustein, J., & Nevy-Williams, E. (2016). *Virtual weapons are turning teen gamblers into serious gamblers*. URL: https://www.bloomberg.com/features/2016-virtual-guns-counterstrike-gambling/.

Campbell, C. 92016). *Washington Gambling Commission demands end to Valve CS:GO skin gambling.* URL: http://www.polygon.com/2016/10/5/13176244/washington-gambling-commission-demands-end-to-valve-cs-go-skin.

Charif, M. (2011). Show me the money: Social games, virtual currency and gambling. *iGaming Business,* March.

Edmonds, T. (2016). Examining skins betting from a gambling law perspective. *World Online Gambling Report,* 145: 3-6.

Gainsbury, S., King, D., Delfabbro, P., Hing, N., Russell, A., Blaszczynski, A., Derevensky, J. (2015). *The use of social media in gambling*. Gambling Research Australia. URL: http://www.gamblingresearch.org.au/resources/d06679ec-3577-4cb0-867c-594ce741dbf6/grasocialmediareport.pdf.

Gambling Commission (2016). *Virtual currencies, eSports, and social gaming – Discussion paper.* URL: http://www.gamblingcommission.gov.uk/PDF/consultations/Virtual-currencies-eSports-and-social-gaming-discussion-paper-August-2016.pdf.

Green, W. (2016). *CSGOLounge To limit skin betting, says it will acquire license.* URL: http://www.esportsbettingreport.com/csgolounge-limit-skin-betting-valve-get-license/.

Grove, C. (2016). *Understanding skin gambling.* Las Vegas: Narus. URL: http://www.esportsbettingreport.com/wp-content/uploads/2016/07/A-Guide-To-Skin-Gambling.pdf.

Lahti, E. (2016). *CS:GO's controversial skin gambling, explained.* URL: http://www.pcgamer.com/csgo-skin-gambling/.

Masters, T., & Louchnikov, A. (2016). *Valve's skin gambling ban and how it affects the eSports industry.* URL: http://esportsobserver.com/valves-skin-gambling-ban-and-how-it-affects-the-esports-industry/.

Morgan Stanley (2012). *Social gambling: Click here to play.* Morgan Stanley Research.

2.0 Blockchain:

2.1 A brief outline of its concept and implications for gambling

According to the Bank of England, a Blockchain is "a technology that allows people who don't know each other to trust a shared record of events". This shared record (ledger) is distributed to all participants in a network who use their computers to validate transactions, thus removing the need for a third party to intermediate.

Blockchains have their origin circa 1981 following attempts to introduce a digital payment system using digital currencies to be transacted on the Internet (Tappscott & Tappscott, 2016). Although initial success and acceptance rates remained relatively low, the concept was revitalised in 2008 in response to the global financial crisis. The shift in interest was generated by a new protocol developed by Satoshi Nakatmoto[8] that allowed peer-to-peer transfer of cryptocurrency (e.g., Bitcoin), contracts, agreements, and business transactions that ensured integrity, security, privacy, and transparency (Iansiti & Lakhani, 2017).

As outlined by Tappscott and Tappscott (2016), this protocol, layered on the Internet, effectively removed the reliance on trusted third parties to monitor, confirm, and maintain permanent records of the validity transactions. By way of illustration, current online banking transactions require a third party (the bank) to authenticate and transfer funds from one party to another. This procedure guarantees that an individual is unable to spend/transact a quantum of fiat currency (physical money) more than once; e.g., the individual pays by credit card, the bank deducts that money from the relevant account and transfers it to a third party. Transactions are rejected if two separate blocks receive inputs from the same cryptocurrency (Ross, 2015). Nakatomo's protocol was designed to maintain a permanent traceable record between two parties that is transparent and open to public scrutiny without the need of a middleman to authenticate transactions.

How does Blockchain operate? Cryptocurrencies are not saved directly to a file recorded in an online server or depository. Rather, the value of the currency is located in a block that is linked to form a Blockchain, hence the term. Each transaction forms a permanent encrypted time stamped record in a block within a publically distributed ledger. This block contains all information relative to all transactions preceding the latest transactions to give a chain of transactions that cannot be altered (Figure 4).

Ledgers are distributed across the Internet with no central database to crack (a term often mistakenly referred to as 'hack' or 'hacking') making it safe from fraud or alteration (Figure 5, Figure 6). All users can trace the providence of a transaction. The protocol, by passing the need for third party (middleman) authentication, allows speedy transfer of currencies (almost instantaneous reconciliation of accounts), lower cost in maintaining records, security, and the elimination of central databases or system open to failure, theft or corrupt.

Although the technology is somewhat complex, the protocol or Blockchain system is founded in general principles (from Tappscott & Tappscott, 2016):
1. *Network integrity:* Blockchains represent a global ledger where all transactions are time-stamped, validated against prior blocks (transaction records) in the chain pertaining to that transactions, are publically accessible thereby precluding hidden transactions, and updated every ten minutes. There is no central database but distributed across multiple network

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[8] The identity of the currency's founder remains a mystery despite attempts to verify them

computers guaranteeing the network's integrity. The end effect is to establish a publically accepted trusted system.

2. *Distributed power:* There is no central or single point of control in a peer-to-peer system. It is steeped in a framework of mass collaboration where everyone can observe and accept the validity of transactions.

3. *Value as incentive:* The Blockchain, by nature of its public domain and support, ensures that there is collaboration in maintaining value of the cryptocurrency and its system. The notion of self-interest, according to Nakatmoto, was sufficient to maintain the viability of the system. There are also financial incentives in that the system eliminates costs associated with third party fees.

4. *Security:* The distributed nature of the system does not lend itself to cracking or corruption. The system has no central repository of data, and any attempt to alter or corrupt would require breaching a series of encrypted blocks forming that chain, a difficult if not impossible task to achieve without massive computational power and time.

5. *Privacy:* The system does not require personal data to be transferred across transactions. The identification and verification layers are kept distinct from the transaction layer. Transactions are referred across encrypted addresses that do not require personal details to be sent in parallel. An equivalent analogy is the TCP/IP address that identifies a network location but contains no personal data.

6. *Rights preserved:* All ownership rights are transparent and enforceable. This enables rights to be identified and traced, including intellectual property.

7. *Inclusion:* The system is open and accessible to everyone globally. There is no need to use intermediaries with transactions able to be effected over any online device.

Blockchain transactions can be used across a range of financial, contractual, and intellectual property domains given that each block represents a permanent record on what can be considered a global virtual ledger open to public scrutiny.
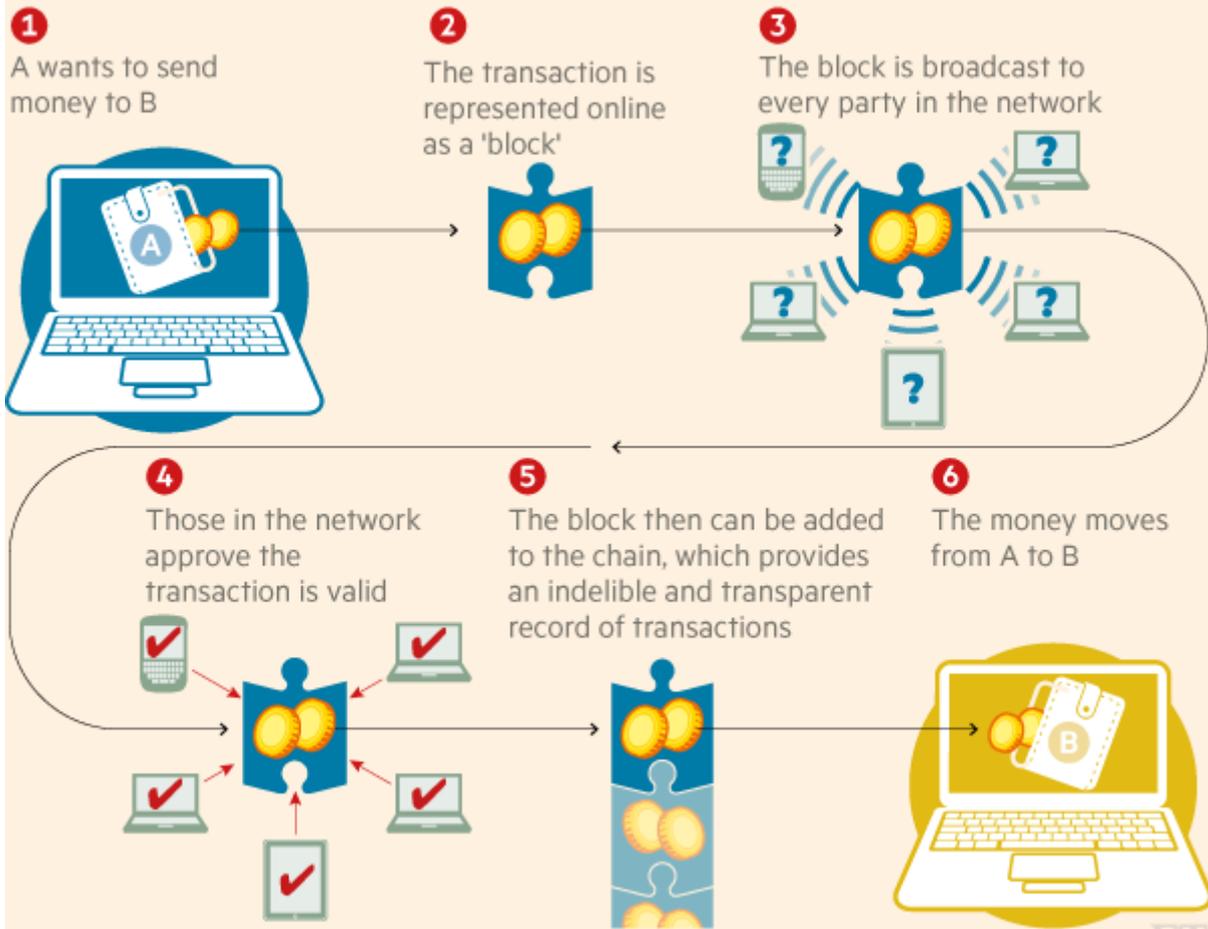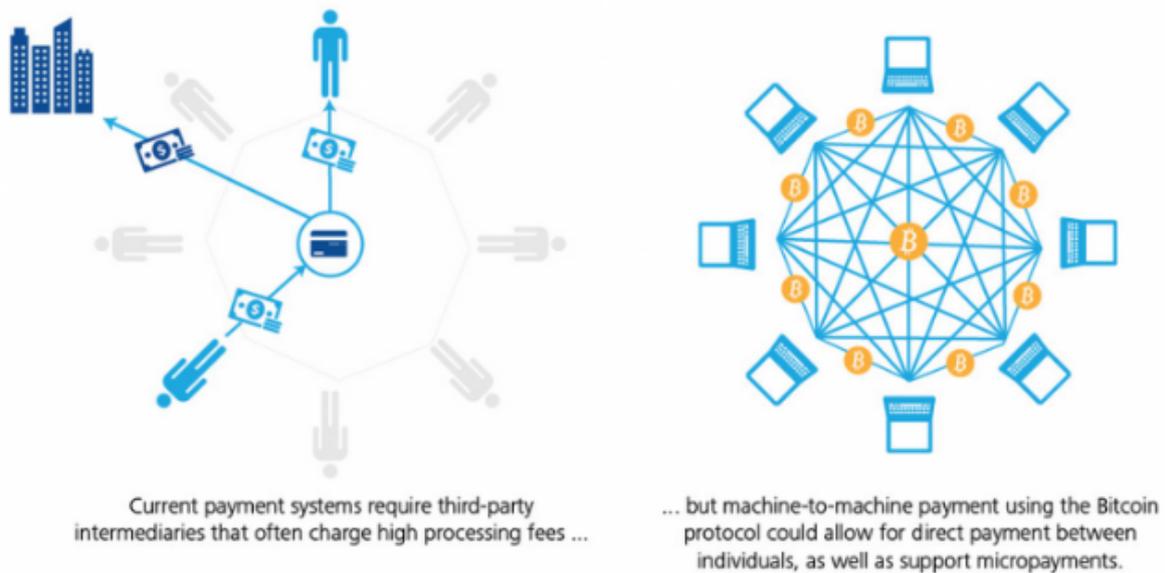
How a blockchain works

1 A wants to send money to B

2 The transaction is represented online as a 'block'

3 The block is broadcast to every party in the network

4 Those in the network approve the transaction is valid

5 The block then can be added to the chain, which provides an indelible and transparent record of transactions

6 The money moves from A to B

Figure 4 How a Blockchain works (http://technofaq.org/posts/2016/08/blockchain-what-is-it-and-how-can-we-use-it/)

Current payment systems require third-party intermediaries that often charge high processing fees ...

... but machine-to-machine payment using the Bitcoin protocol could allow for direct payment between individuals, as well as support micropayments.

Graphic: Deloitte University Press | DUPress.com

Figure 5 Payment processes: Current vs. Blockchain (Bitcoin) (http://traxpay.com/2015/09/banking-on-the-blockchain-part-1/)

2.2 Bitcoin

The primary cryptocurrency, Bitcoin, is notoriously volatile. At the time of writing, one Bitcoin equals 696.77 British Pounds. The currency has endured a series of falls but has been increasing since mid-2016 (Figure 7). The value of Bitcoin is related to similar factors as other currency markets such as the availability of money supply as well as economic and political factors (such as Brexit, US election outcome, and value of the Chinese yuan) (Juniper Research, 2016).

Bitcoins can be purchased anonymously as transactions are tied to 'wallets' rather than individuals. This enhances privacy, but may reduce the ability for identity verification of consumers. However, identifies within a Blockchain are unique and can be set to require a high level of assurance that users are accurately identified (Deloitte, 2016).
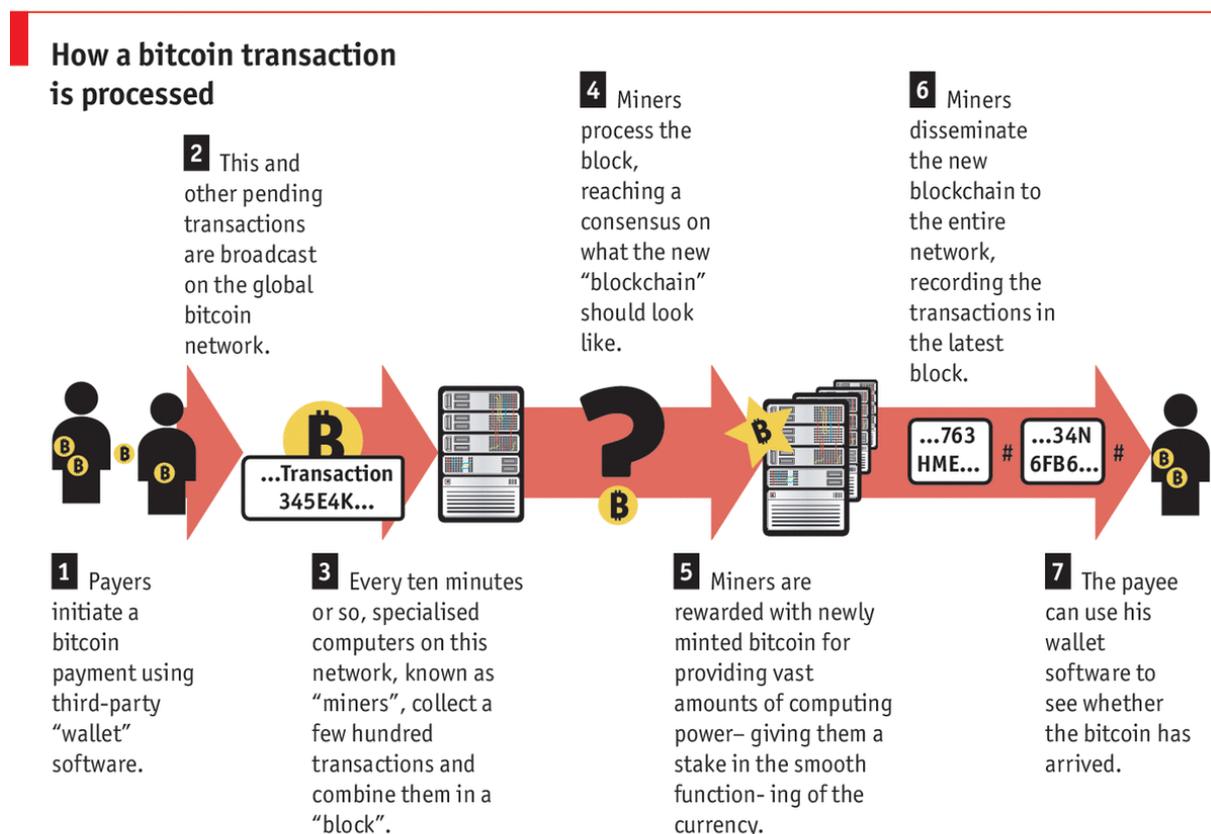

Figure 6 How a bitcoin transaction is processed (The Economist, 2015) (http://www.economist.com/news/special-report/21650295-or-it-next-big-thing)

UK residents can purchase Bitcoins through numerous online exchanges using bank payments (although some banks are reluctant to service Bitcoin companies), credit or debit cards (Figure 8) (Coindesk, 2016). In most cases, consumers need to register and provide proof of residency and identity. Bitcoin ATMs are also available in the UK. Peer-to-peer platforms also allow individuals to buy, sell, or trade bitcoin and altcoins. Some retail outlets sell Bitcoin vouchers. Bitcoin can be stored in electronic or hardware wallets. VentureScanner.com estimates that there are now over 800 new ventures in the global Bitcoin 'ecosystem', which include novel and innovative companies, as well as traditional companies engaging with this concept (Reported by Deloitte See: https://www.venturescanner.com/)

Figure 7 Bitcoin price (£)
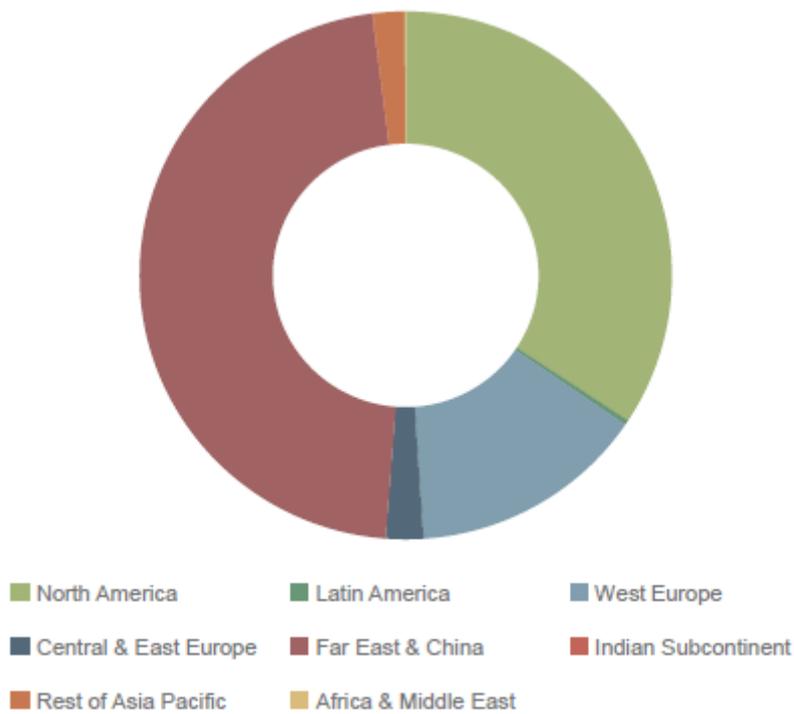
Source: Juniper Research

Figure 8 Regional share of Bitcoin transaction value, 2016 ($92.4bn)

2.3 What are the implications for gambling?

A peer-to-peer system has the capacity to form a decentralized gambling platform (Davies, 2016).
For example, VDice a leader in this domain of gambling, uses the Ethereum Blockchain to offer game

codes (Smart Contracts) that reside on the network and eliminate third party financial institution to transfer funds. Smart Contracts are codes that run without the requirements of external network agents, that is, the no one controls the game nor can it be taken down (Davies, 2016). Smart contracts can self-execute, for example, triggering the release of payment when certain conditions are fulfilled (Figure 9). This takes out the middle-man (operator) and allows peer-to-peer gambling using a smart contract code. Blockchain allows the game/code to exist on the Ethereum network where it cannot be controlled or altered.
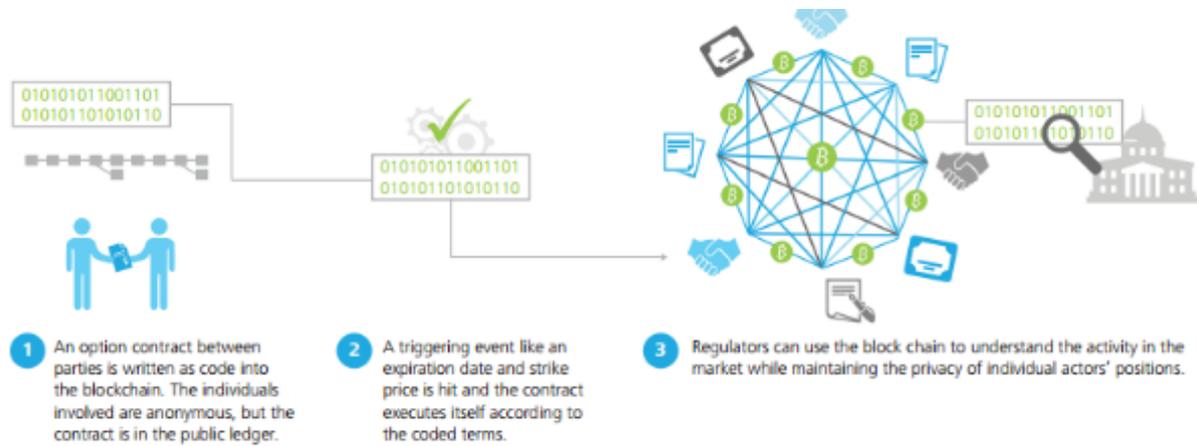
Graphic: Deloitte University Press, DUPress.com

Figure 9 Using the Bitcoin Blockchain for smart contracts

The advantage for the gambling industry is the ability for Blockchains to provide an efficient and reliable authentication of transactions in a timely and cost effective technology architecture. As noted by Huber (2016), "*On blockchain's decentralized system, which is built by a coordinated network of independent nodes, no particular individual or entity can have a centralized advantage at any stage of the gambling process. Gambling companies can use blockchain to assure users that they are completely incapable of knowing the result of an outcome – such as the dealing of a particular card – in advance. By removing the entire concept of centralization, and by putting the verification of bets in the hands of the network of nodes, the requirement for a third-party point of trust automatically becomes redundant*". As users can verify the integrity of games and gambling products themselves, this removes the need for regulators to perform this function. This may represent a competitive advantage for online gambling sites as consumers are not reliant on verification of product fairness by a third-party.

The use of digital currency bypasses restrictions on payment methods. For example, in the United States of America, payments to online gambling sites are not permitted from banking providers (Nyairo, 2015). Digital currency does not involve banking providers and thus can be used for online gambling.

Currently, there are several start-up groups advancing the transformational shift from traditional to Blockchain-based system in gambling, for example, Augur in California, Firstblood in the USA, and Play Chinese online casino operator, and agencies in Malta, Isle of Man and Alderney advocating for the introduction of Blockchain gambling. There are over 100 bitcoin-based casinos currently operating although the industry is yet to fully adopt and accept distributed ledger technology (Totally Gaming, 2016) with significant implications for investments already allocated to land-based venues. Given the open source platform, software developers have the capacity to write their own versions of smart contract game codes (Kastelein, 2016).

The open and transparent nature of Blockchain has advantages for regulators. As André Wilsenach, previously of the Alderney Gambling Control Commission stated, *"shared, digitalized, decentralized" information in a blockchain-based ledger system would provide regulators with significantly easier access to important data"* (Huber, 2016). As Ayre (2106) stated: *"With the blockchain documenting every financial transaction, spin of a roulette wheel and roll of the dice, gamblers can act as their own regulators, with any examples of shady behavior on full display for all the world to see and market forces punishing any operator stupid enough to think they can get away with it."*

2.4 Potential Blockchain opportunities:
- Reduced of risk of error and time taken for error checking – making payments, transfers and gambling activity outcomes more accurate and rapid.
- Reduced risk of fraud and invalid transactions as records cannot be altered.
- No need for currency exchange and associated fees – allows online gambling sites to accept players from any country, consumers can engage with any international online gambling sites without currency-related fees.
- No limitations set by financial institutions on gambling transactions – may reduce the need for consumers to rely on less reputable third-party payment providers.
- No risks that gambling sites will not honour payouts or account withdrawals – may reduce the need for affiliates and information sites/forums that verify online gambling sites.
- No risk that gambling products and games are not fair – consumers can verify outcomes, may reduce the need for a regulator to verify and license operators; may substantially reduce disreputable offshore gambling sites that do not provide fair products and pay customers; may reduce online gambling licensing organisations as these may no longer be necessary or required for consumer trust.
- Peer-to -peer gambling can be verified with automated payments – may reduce the need for consumers to use licensed commercial gambling sites for peer-to-peer gambling activities (e.g., poker, betting exchanges). This could be transformative, e.g., social betting sites becoming active betting sites and poker games being widely available with known and unknown associates. Other gambling activities may increase in popularity, such as betting on a coin-toss and lottery draws, all possible through smart contracts ensuring payments to the winning parties.
- No ability to bet with credit – accounts must have funds before gamble can be allowed.
- Reduced costs, including for facilitating and verifying transactions – may reduce costs for consumers.
- A distributed ledger increases transparency – may increase consumer confidence and subsequent uptake of blockchain gambling. Also may increase efficiency for operators and regulators as data is standardized across the industry, processes are conducted with integrity and records are verified in near real-time.
- A Blockchain-based registry could remove duplication of effort in conducting identity verification and enable encrypted updates to be delivered to all relevant parties in near real-time.
- A ledger would provide a historical record of all transactions for customers.
- Subject to data protection regulation, data could be analysed to detect irregular activity, which may indicate match fixing, money laundering or other criminal activity.

2.5 Summary
The current requirement to involve third parties in online transactions may be fundamentally altered by Blockchain technology. Iansite and Lakhani (2017) note that the Blockchain technology has the capacity to exert a major influence of economic, financial, and social systems and interactions but apply a more tempered prediction of its adoption. These authors reflect on the number of decades

since 1972 required for the Internet to transition from a local single user group-oriented resource to a global virtual communication system that is now functioning fully independently of any one operator, server, or agency. Initially lack of understanding and knowledge of its capacity, privacy concerns, and security issues represented serious challenges and barriers to widespread acceptance. Thirty years hence, the Internet has become an integral, essential, and commonplace resource to everyday commerce and social exchanges.

Relatively slow uptakes of technology are not unusual. Similar shifts are occurring with virtual reality, although head mounted displays were available in the 1960s, new technology and adoption are seeing a rapid increase in the relevance of this technology. It has been argued that a "killer app" may result in a breakthrough and tipping point, like the widespread adoption of augmented reality following the hugely popular app Pokémon GO.

Iansite and Lakhani (2017) have similarly estimated that it will take a significant passage of time and popular acceptance for Blockchain to evolve into a universally adopted platform replacing traditional commerce and finance. These authors suggest a quadrant or matrix describing the potential path of transition from single use, to localization of use within a defined community, to broader and increasing public usage, to final transformation and widespread adoption. Setting aside the complexities and timeframe for a transformational adoption, these authors conclude that Blockchain technology will emerge over time to affect a multitude of social, financial, and commercial activities including gambling as a business activity.

Blockchain is not just about cryptocurrencies and faster peer-to-peer payouts. It is part of a rapidly growing ecosystem of advanced technologies that will play a fundamental role in the future of commerce and society. Accordingly, it is predicted that Blockchain will form a strong foundation for gambling opportunities and transactions that will in some way impact regulators, either generating novel approaches to regulatory and compliance issues, or through mass collaboration, eliminate the need for regulators in a self-governing system.

2.6 References:

Ayre, C (2106). *Crystal Balls: Calvin Ayre's predictions for 2017*. URL: http://calvinayre.com/2016/12/28/business/calvin-ayre-has-crystal-balls/. Retrieved 15 January 2017.

Coindesk (2016). How to buy Bitcoin in the UK. URL: http://www.coindesk.com/information/buy-bitcoin-uk/. Retrieved 16 January 2017.

Davies, J. (2016). *How Blockchain is decentralising gambling.* Techinasia. https://www.techinasia.com/talk/blockchain-decentralizing-gambling. Retrieved 15 January 2015.

Deloitte. (2016). *Blockchain: Enigma, paradox, opportunity.* Deloitte. London, UK.

Huber, S. (2016). *Gambling industry, How Blockchain can make it more transparent.* Fintech. URL: http://fintechnews.ch/blockchain_bitcoin/transparent-gambling-blockchain-gambling-industry-how-blockchain-can-make-it-more-transparent/3844/. Retrieved 15 January 2017.

Iansiti, M., & Lakhani, K.R. (2017). The truth about Blockchain. *Harvard Business Review.* URL: https://hbr.org/2017/01/the-truth-about-blockchain. Retrieved 15 January 2017.

Imgur, 2016). http://imgur.com/a/iglkX. Retrieved 16 January 2017.

Juniper Research (2016). *Blockchain reaction: White paper.* Juniper Research. Hampshire, UK.

Kastelein, R. (2016). *Online gambling industry worth some $40 billion firing up for Blockchain.* Blockchain News. URL: http://www.the-blockchain.com/2016/11/26/online-gambling-industry-worth-40-billion-firing-blockchain/. Retrieved 15 January 2017.

Nyairo, D. (2015). *What if online casinos were built on the Blockchain itself?* Bitcoin Gambling. URL: https://www.bitcoingg.com/online-casinos-built-blockchain-instead/. Retrieved 15 January 2017.

Paul, J. (2016). *By the numbers: Most popular online games right now*. URL: https://nowloading.co/posts/3916216. Retrieved 16 January 2017.

Ross, S. (2105). *How does a block chain prevent double-spending of Bitcoins?* Investopedia. URL: http://www.investopedia.com/ask/answers/061915/how-does-block-chain-prevent-doublespending-bitcoins.asp Retrieved 15 January 2017.

Steamspy. (2016). http://steamspy.com/country/. Retrieved 16 January 2017.

Tappscott, D., & Tappscott, A. (2016). *Blockchain revolution: How the technology behind Bitcoin is changing money, business and the world*. London: Penguin.

Totally Gaming (2016). *Insight: Why Blockchains could be a winner for the gambling industry.* UTR: http://totallygaming.com/news/lottery/insight-why-blockchain-could-be-winner-gambling-industry. Retrieved 15 January 2017.

Zalik, D. (2015). *Surveying The scene: Examining the demographics of eSports*. URL: http://www.esportsbets.com/998/who-makes-up-esports-community/. Retrieved 16 January 2017.