

GACHA GAMES AS A SAFE FORM OF ENTERTAINMENT

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By

David Xue

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

ADVISOR

Catherine D. Baritaud, Department of Engineering and Society

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WHAT IS A GACHA GAME?

The term gacha originates from Japan as a shortened form of gachapon, the sound that a toy capsule machine would make when it dispenses a capsule (Famularo, 2017, pp. 1). These toy capsule machines or “gachas” dispense collectible toys with different designs that both kids and adults could collect. However, the gacha that game developers are interested in are mainly digital instead of physical. A digital gacha has many advantages over a physical gacha that allowed it to have a freemium business model. An example being that digital gacha can dispense items almost immediately when a design finishes. While in a traditional physical gacha, physical places like a factory create items which then requires transportation to their gacha machine. The term “gacha” in this paper will mostly refer to digital gachas and games that include some aspect of gacha will be collectively referred to as gacha games. Gacha is a type of freemium business model which means that the users may use the product for free, however, they may also buy more features with a premium (money) to enhance the free functionality of the product/service.

SAFENESS OF A GACHA GAME AND A BIAS ASSESSMENT

For the technical project done in conjunction with this research, the team is developing an assessment system for TheSum nonprofit organization to facilitate users in taking the Power of Difference Assessment (PDA). The purpose of the assessment is to help users learn more about their biases towards other people. The assessment consists of two parts, a demographic section and a statement evaluation section. When a user finishes their results, they may schedule an appointment with a consultant from TheSum to discuss the results. Using the demographics, a

consultor can help people understand how they think in life, and encourage them to be more accepting and appreciative of differences between people.

Between the safeness of a gacha game and the PDA created for TheSum, both topics are loosely coupled. The safeness of a gacha game focuses on whether gacha gaming is safe by analyzing opinions from different countries through their gambling laws. The PDA focuses on measuring a person's bias by looking at how they respond to different statements and checks whether a person's demographics plays any influence on the response. However, these two topics do share a connection because laws are a social construct. Social constructs are a result of what most people find acceptable to live a in society and it is through their world views that construct them. Since TheSum helps people recognize different world views and helps them accept them, it could make a controversial issue like gacha games being gambling clearer as lawmakers create more laws with a better understanding of different world views. The main way I plan to frame this is context is through the Social Construction of Technology. My STS research question asks what is the legal perspective on the safeness of gacha games.

Understanding the safeness of gacha games is important because online and mobile gaming are only getting more popular every year and gacha is becoming one of the fundamental business models that game developers are using to fund themselves. Top gacha games have already shown success in making money with top earners like Fate/Grand Order that came out in 2015, having earned \$236 million as of 2019. (Teraoka, 2019). If gacha games are deemed to be unsafe activity like gambling for users, then this issue would cause trouble for many game developers who would have to switch to different monetization method, and users who have already invested lots of money into gacha game.

This topic will attempt to answer the controversial question of determining if gacha games are gambling to decide if they are a safe form of entertainment by current legal standards. It is important to note that the research done to answer this question in this paper focuses on laws in place around the world. There are many potential concerns about the safety of gacha games, but the scope of this research limit research to laws because laws give the most clear answer, while other sources are a bit more subjective. The main interest in researching this topic came from concerns on the nature of the way top performing gacha game earn their money.

INCREASING POPULARITY OF GACHA GAMES

Since the late 2000s, many game developers have switched to or incorporated a freemium business model known as gacha as alternative method to a subscription or one time fee business model (Heinze, 2017). The main appeal of a freemium model like gacha is it allows a new venture to scale up and attract a user base without expending money on costly advertisement campaigns (Kumar, 2015, para. 2). The success of gacha games due to these reasons have led to increase popularity of the freemium model. Gacha's popularity has spread beyond Japan to the point where it has arrived in Europe and North America under a new name called loot boxes.

Gacha games typically follow a pattern shown below in Figure 1.

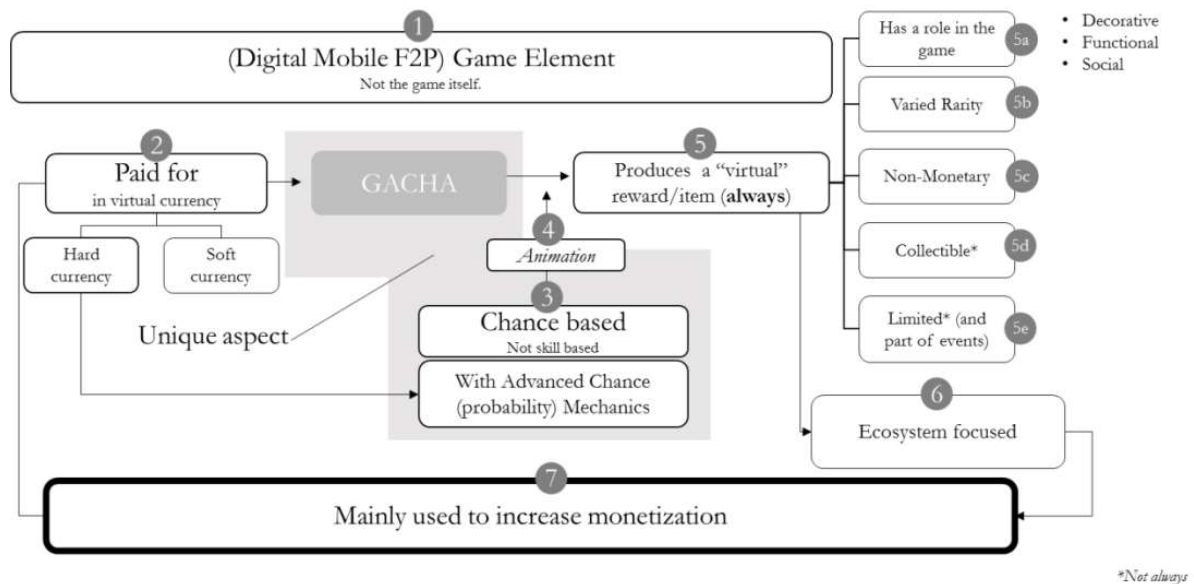


Figure 1: Outline of Gacha elements in Japanese mobile F2P games: This figure shows how the gacha element work in most mobile F2P (Koeder & Tanaka, 2017, p. 5).

Figure 1 created by Koeder and Tanaka (2017) shows some key points about gacha in most free to play settings (p. 5). From this figure, it shows that gacha typically does not dominate overall gameplay; instead its more of an encouragement for a user to play the game longer to increase monetization. Another key point is gachas tend to have a soft currency that is collectible in-game and a hard currency that users may buy with money. A gacha roll depends on chance and accepts both currencies with the hard currency usually having better rewards/chances. The result of a gacha roll will always produce a reward regardless of the type of currency used and these rewards serve several purposes that are decorative, functional, or social within the game. It is important to note that the rewards will usually only be considered valuable in the ecosystem of the game. When a user has finished a roll or play of the gacha, they have the choice to return to the main gameplay features or to do another gacha roll. This information will define the overall standard for a gacha in gacha games in this paper.

GACHA APPEARS SIMILAR TO GAMBLING

Looking back at Figure 1, the biggest point of contention that most people have with gacha games is that it seems very similar to gambling due to its chance based interaction in how a gacha dispense its items. This has led many people to think that the gacha aspect of gacha games are predatory and not very safe (Porata, 2019, pp. 1). To further analyze the situation, this paper will analyze the situation according to the Social Construction of Technology method.

According to the Social Construction of Technology (SCOT) (1987), technology does not decide human action, but rather human action determines technology. Leading advocates of the of SCOT, Wiebe Bijeker and Trevor Pinch (1987), say there are 4 main parts: relevant social groups, interpretive flexibility, closure, and wider context. The first part that this paper will look at are the relevant social groups. Relevant social groups are the key stakeholders that influence how society views a technology like gacha. Figure 2 below illustrates these key stakeholders in context of gacha games.



Figure 2: Relevant Social Groups According to the Social Construction of Technology: This figure shows key stakeholders that influence the concept that Gacha is Gambling (Xue, 2020).

According to Figure 2, the key stakeholders are countries, lawmakers, gambling institutions, gacha gamers, and game developers. Countries are a key stakeholder because they may influence other countries to accept or reject the notion that gacha is gambling. Lawmakers are a key stakeholder, because they influence laws about gacha. Gambling institutions are a stakeholder because stricter gambling laws due to gacha games directly affect their business. Game developers are stakeholders because heavy restriction on gacha may cause them to find other means on income. Gacha gamers are key stakeholder because they are the primary users who play gacha games.

After looking at the relevant social groups, SCOT(1987) says that gacha has interpretive flexibility or different meaning to the different stakeholders. To the countries and lawmakers, gacha could be something of harm to their citizens if it has the same problematic potential as

gaming. To game developers and gambling institutions, gacha is a means of making for their games and businesses. To gacha gamers, gacha is something meant to entertain them.

The next part, closure, focuses on how flexible the current definition of the technology is. Gacha is not completely inflexible, however, a large part of its identity is already tied to gaming. When looking at gacha games in Figure 1, there are many properties to consider when looking at a gacha reward. In terms of rules and regulation, the world is trying to figure out where gacha games belong, and this paper aims to answer some of those questions.

The last part, wider context, talks about the culture in which the technology exists. Going back to the origin of gacha, the original version of the gacha, physical gachas, were widely considered safe. Physical gachas were often at visible places like a local store or restaurant. Children and adults who used the gacha machines were often limited by the amount of money they carried physically on them. Gacha items were often visible to the users through clear machine glass. Digital gachas are more problematic when compared to physical gachas. Digital gachas mostly grew in popularity due to the increasing popularity of mobile games during the late 2000s. Digital gacha could come from a public place like an appstore on your phone, or from a third-party site not commonly known. Children and adults are no longer limited by the amount of money they carry, but instead by an entirety of a credit card. Gacha items are harder to spot as a user can no longer look through a glass to confirm how many gacha items remain as it is now infinite. There are many worries about the nature of a digital gacha, but due to the nature of this paper, it will focus on the primary concern that gachas are dangerous because it is considered gambling.

DETERMING GACHA AND GAMBLING IN THE WIDER WORLD.

The main method this paper seeks to answer this questions is to take a document analysis approach by analyzing responses from major figures like countries and their responses to gachas and gambling. This paper will group countries that have similar characteristics to better explain the results. The purpose is to gather their responses toward gambling, and analyze any patterns that seem common among countries. This paper will take a second approach by using the exploratory study on gambling by Gainsbury et al. (2014) that provides a classification scheme or taxonomy this research will compare the results with. The way they approached this study is similar to an Actor Network Theory method as they interviewed different individuals and found out their motivation for approaching certain genres of games (Gainsbury et al., 2014, p. 5). Then they took note of the relationships to find out how the games related with each other to create a taxonomy for lawmakers (Gainsbury et al., 2014, p. 5). The goals of their taxonomy was to “promote clear and consistent discussion to guide ongoing investigation of new and emerging Internet gambling and gaming technologies” (Gainsbury et al., 2014, p. 1). This taxonomy approach will give a second way to analyze if gacha is gambling.

THE WORLD’S LAW ON GAMBLING AND GACHA

The first countries that this research looked are the eastern countries, Japan and China, where gacha has existed longer. They have decided that gacha is not gambling, but rather needs different kind of regulation.

In Japan, one type of gacha the “Kompu” or complete gacha, has already been banned (Schwiddessen, 2018, p. 5). The reason for the ban was due to the controversial monetization policy that encouraged users to spend exorbitant amounts of money to get further in a gacha game. This controversial policy caused the Japanese government to investigate the policy where

they found the complete gacha violating a 1977 law that prevented Unjustifiable Extras or Unexpected Benefit and Misleading Representation that lawmakers created to stop kids from spending excessive amount of money on baseball cards (Akimoto, 2012, p. 18). The lawmakers allowed remaining types of gacha after the incident to stay after passing a law that required all gachas to give clear rates for rare items in their system. In addition, lawmakers found gacha games not to be gambling as gacha rewards had no monetary value. In Japan, gacha games are not gambling as long as the users are not tricked in spending an unnecessary amount of money and the rewards have no monetary value.

In China, the country has taken a similar route to Japan by forcing game developers to show the drop rates of rare items and banning the complete gacha, while going a step further by directly limiting the amount of gacha pulls a user can do in a single day and forcing companies to guarantee a rare item in a predetermined number of boxes (Fong, 2019, para. 3). To the Chinese government, this regulation pushes gachas further away from gambling as a guaranteed rare item will eventually come when the user has played the gacha enough. In addition, the Chinese government finds gacha games are not gambling because the rewards have no monetary value.

Western Countries where gacha is more recent have also done some investigation about whether gacha games are gambling. However their investigations have brought different results.

Figure 3 below groups some western countries based on the results of their investigations.

The first group of western countries this research will look at are the countries that say gacha is gambling includes Belgium and the Netherlands. Belgium and the Netherlands, known for having the strictest gambling laws in Europe, are very useful in looking at why gachas might be considered gambling.

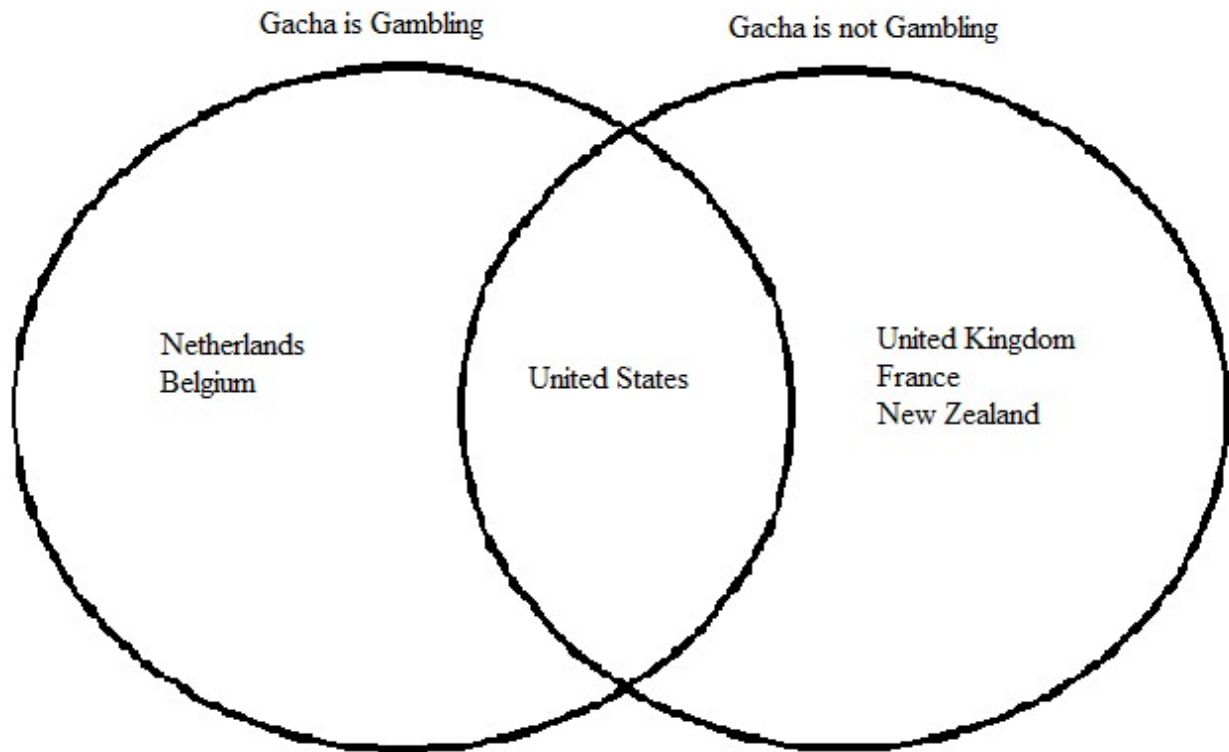


Figure 3: Venn Diagram of Some Western Countries and their Position on Gacha as Gambling: This figure shows the stances of different western countries and their opinions on gacha as gambling (Xue, 2020).

In Belgium, the country has completely banned gacha games as a result of a government investigation that considered it gambling and bad for the mental health of children (Gerken, 2018, para. 1). According to Belgium’s Gambling Law 2011, for the law to consider an activity gambling, it needs to “be a game, involve a stake of any kind, result in a loss or gain (monetary value), and involve at least a minimal amount of chance” (Paepe, 2019, para. 1). According to this law, the gacha games in the investigation are gambling because the games match all four criteria for people to consider them gambling.

The Netherlands with less severe gambling laws also took a similar route to Belgium about gacha games being gambling. According to Netherlands Betting and Gambling Act of 1964, for the criteria for the law to qualify an activity as gambling are “an opportunity for

participants to compete for prizes or premiums,” and “the winners of these prize and premiums are designated where players are generally unable to exert a dominant influence” (Littler & Hoorn, 2019, para. 2). An investigation found a few games with gacha elements allowed users to trade gacha rewards which gave the rewards monetary value which is against the gambling legislature (Arif, 2018, para. 3). As a result, the country banned gachas games regardless of the type of gacha they used.

The next group of countries in Figure 3 that this research discusses are the western countries that say gacha is not gambling. These countries include the United Kingdom, France, and New Zealand.

According to the United Kingdom’s Gambling Act 2005, their law states as long as there is no monetary incentive or reward, then it is not gambling; otherwise the business needs to get a gambling license and users are age restricted to at least 16-18 years old depending on the activity (United Kingdom Gambling Commission, 2005, para. 1). Based on this law, the United Kingdom found gacha is not gambling as the gaming ecosystem limits the rewards from gacha to the games where users earn them and because gacha rewards cannot be cashed out (Macy, 2017, para.1).

In France, an activity counts as gambling if there’s “ a public offer, an expectation for the participant to win, and intervention of chance, a financial sacrifice by the participant” (Badiane & Bourgeois, 2019, para. 2). The French government found that gacha is not classified as gambling because the player is sacrificing money in attempt to improve the game in some way and there is rarely a way for user to cash out a gacha reward (Huck, 2019, para 4.).

In New Zealand, their gambling law separates gambling activity into multiple classes that need different treatment depending on how much money a user can make (New Zealand

Department of Internal Affairs, 2019, para. 2). From this law, the government determined that gacha games are not gambling because the player does not seek to earn monetary gain when using them (Makuch, 2017, para. 2).

The main neutral country in this context is the United States. According to the USLegal (n.d), the federal government defines the conditions for illegal gambling activity as “violating of the state’s gambling law where the activity took player and having more than five people who run and take part in the activity, and has been continuously operating for 30 days or makes more than \$2000 in a single day” (para. 2). Due to the federal government giving a lot of control of gambling to the states, there are different opinions throughout the United States.

For example in Hawaii, Chris Lee, a member of the Hawaiian State Assembly, compared gacha to an online casino that persuaded children to spend money which led lawmakers passing a Hawaiian law that requires age restriction when spending money on a game with gacha elements as well as including a warning if a game contained gacha elements (Khan, 2017, para. 1). On the contrary, Michael Gallagher, president of the Entertainment Software Association, says gachas are not gambling because it has always delivered the user something for the their money (Chalk, 2018, para. 2).

Using the document analysis approach mentioned on page 8, there are some noticeable patterns that are common among the responses from some countries. One pattern is most countries that decided gacha is not gambling like the United Kingdom, France, and New Zealand, say its due to fact that gacha rewards do not have have monetary value. A common pattern among all countries is that a key characteristic of gambling is the fact that it is more dependent on chance and not skill. Another pattern found among the countries that concluded gacha is gambling is that the bans came from a few violating games, and made it possible to

trade gacha items which caused those countries to decide all gacha games were gambling. A final pattern seen is the amount of concern that gacha is bad for mental health of its users from lawmakers in Belgium, China, Japan, and Hawaii.

Looking at the patterns gathered from the different countries, as graphically depicted in Figure 1 on page 4 to analyze them. Looking at the first pattern, monetary value, gacha is not gambling because the rewards do not have monetary value. This pattern matches the diagram as it shows none of the rewards from gacha have real monetary value. The second pattern, skill dependency, shows that all countries decided that gambling is chance dominant. This pattern matches the diagram because the diagram shows chance is an important part of a gacha game which makes gacha games and gambling similar in this aspect. The third pattern, banned games, gacha items being tradeable violates the diagram on page 4 because ecosystem key point says the rewards should only be valuable inside their game ecosystem. By allowing users to exchange gacha rewards for real world money, these gacha games have broken the definition of a gacha game. The last pattern, mental health, shows gachas being bad for the mental health of the users cannot be explained using a diagram as gacha games focus mainly on letting the user get a reward that's only valuable in its game by chance. From this analysis, the results show gacha is not gambling.

Using the taxonomy approach mentioned on page 8, this paper approaches the results from the flow chart provided by Gainsbury et al. (2014) as shown below in Figure 4.

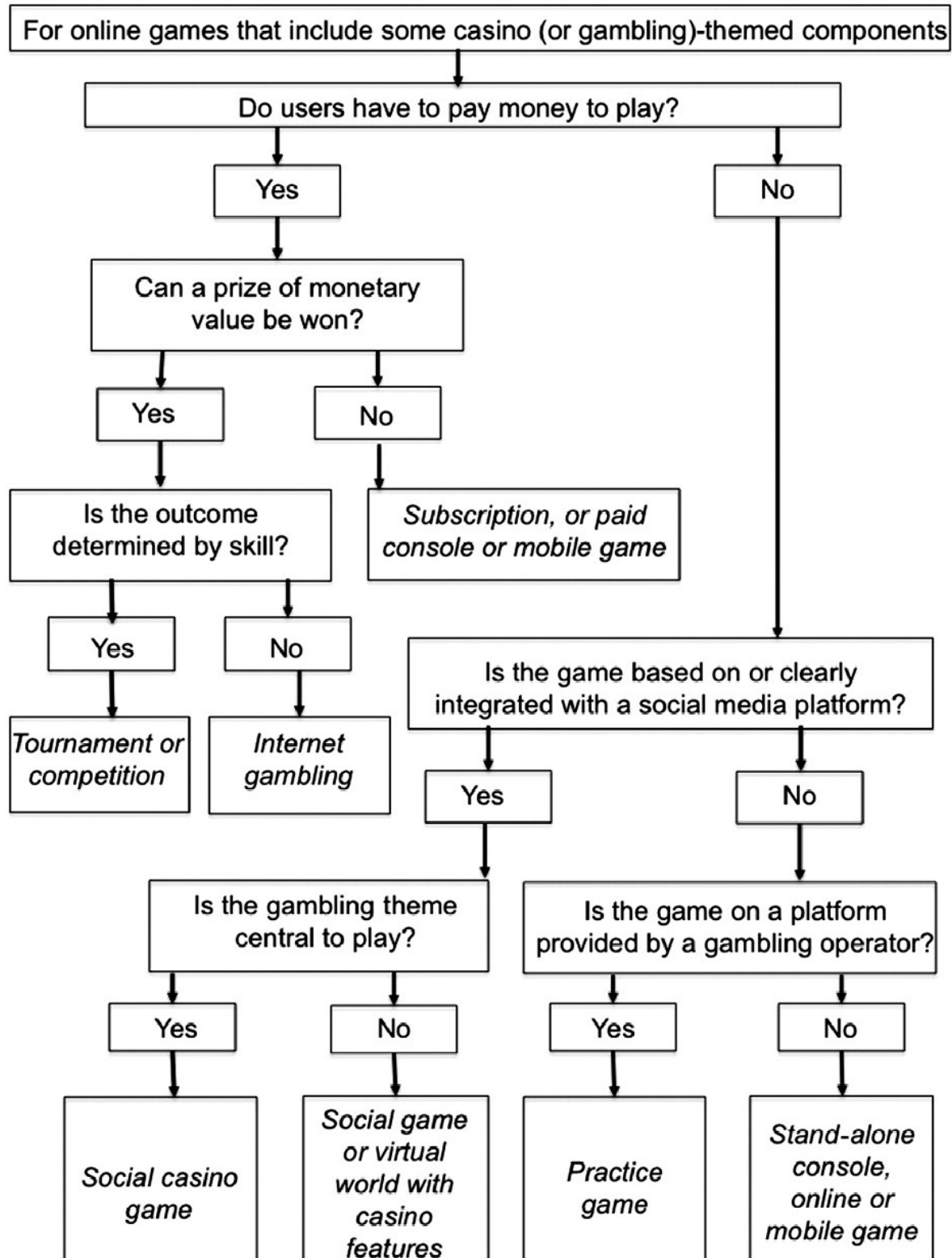


Figure 4: Taxonomy of online gambling-themed activities: This figure shows a guideline to determine how to classify games that seem to have gambling elements in them (Gainsbury, Hing, Delfabbro, & King, 2014, p. 4).

Looking at Figure 4, the reader can examine what paths would classify a game as gambling, and what paths would a gacha game go through. By doing this analysis, the results show there are some similarities between Figure 1 on page 4 and the responses made by different countries.

Looking at the outcomes of this taxonomy there is one outcome that would lead to the taxonomy classifying a gacha game as gambling. The first question in this flowchart asks if users need money to play this game. Money in this context means real world money and not in-game currency. To get to the gambling classification, users would have to pay real world money in some way. Now using the gacha game pattern shown in Figure 1 on page 4 players could use either a soft currency or hard currency to play the gacha. If a gacha strictly uses a soft currency payment method, then it does not need to have users pay which disqualifies it from being treated as gambling. This is also matches gambling laws in the France that requires users to make a financial sacrifice. The next question asks if users can win a prize of monetary value. This is an important question as all the countries researched in this paper specifically mention that a game needs to have a prize of monetary value for the law to consider it gambling. If users can trade gacha items through some market easily, then the law decides the game is gambling. This is the main reason Belgium and the Netherlands banned gacha games in their countries. If it cannot be traded, then the game is just a normal game that requires users to pay money to play. The last question is if the game is more chance reliant than skill related. The purpose of this question is to differentiate activities like tournaments or competitions from gambling. This property is just as important as a monetary prize as several definitions of gambling like the United Kingdom, France, Belgium, and the Netherlands include the property in their definitions of gambling.

Using the diagram that explains gacha games in Figure 1, the diagram shows that chance and hard currency is an important part of what makes a gacha game work. Gacha rewards being given monetary value is not shown in Figure 1 because it is not a property that is given by gacha. While a person could argue that certain gacha rewards being rare adds monetary value to them, it is a separate system like outside markets that allows easy transfer between players that give rare items monetary value. Therefore, from this approach, gacha games are not gambling.

GACHA GAMES ARE NOT GAMBLING

From the results of this paper it is very easy to understand why people would think gachas game would be gambling. Both activities need users to pay to participate, and the results are often more chance dominant than related to skill. However, there are differences when it comes to the motivations of both activities and the monetary value of the rewards. The purpose for gambling is often to earn items with real monetary value while the purpose of playing a gacha game is to earn a rare item that's only valuable within the game. Looking at the current legal definitions of gambling, gacha games are not as legally dangerous as gambling.

While this paper does prove gacha games are not as legally dangerous as gambling, it does not mean it will remain this way forever. As mentioned before laws are a social construct, and therefore change when key stakeholders show interest in changing them. Several countries have mentioned in responses that there is concern that gacha causes poor mental health. This piece of context is important because as relevant social groups work together to come up with rules deciding what gacha games are, it brings closure to the topic. As a result, this legal definition of gacha games may change if relevant social groups decide mental health is an important component in determining what is gambling.

REFERENCES

- Adish Co. Ltd. (2018, October 9). The fine line between gambling and gaming: The short international history of loot box/gacha and regulations for all game devs: CS agents. Retrieved February 24, 2020, from <https://cs-agents.com/blog/history-loot-box-gacha/>
- Akimoto, A. (2012, May 16). Japan's social-gaming industry hindered by government's anti-gambling move. Retrieved from <https://www.japantimes.co.jp/life/2012/05/16/digital/japans-social-gaming-industry-hindered-by-governments-anti-gambling-move#.XnLoq6hKiUk>
- Arif, S. (2018, June 20). The Netherlands starts enforcing its loot box ban. Retrieved from <https://www.ign.com/articles/2018/06/20/the-netherlands-starts-enforcing-its-loot-box-ban>
- Badiane, L., & Bourgeois, M. (2019, November 20). Gambling 2020: Laws and regulations: France: ICLG. Retrieved from <https://iclg.com/practice-areas/gambling-laws-and-regulations/france>
- Bijker, Wiebe. (1987). The social construction of bakelite: Toward a theory of invention. In *The social construction of technological systems: New directions in the sociology and history of technology*, edited by Wiebe Bijker, Thomas Hughes, and Trevor Pinch, 17-50. Cambridge, MA: MIT Press.
- Chalk, A. (2018, May 28). ESA president defends loot boxes, warns against government regulation. Retrieved February 24, 2020, from <https://www.pcgamer.com/esa-president-defends-loot-boxes-warns-against-government-regulation/>
- Famularo, J. (2017, February 2). 'Fire Emblem Heroes' is a gacha game. Retrieved September 30, 2019, from <https://www.inverse.com/article/27267-what-are-gacha-games-fire-emblem-heroes>
- Fong, H. (2019, May 7). Loot box design 2.0 – complying with China's new rules. Retrieved February 24, 2020, from https://www.gamasutra.com/blogs/HenryFong/20190507/342062/Loot_Box_Design_20__Complying_with_Chinas_New_Rules.php
- Gerken, T. (2018, April 26). Video game loot boxes declared illegal under Belgium gambling laws. Retrieved February 24, 2020, from <https://www.bbc.com/news/technology-43906306>
- Heinze Tuesday, J. (2017, July 18). How gacha can benefit western game developers. Retrieved October 1, 2019, from <https://www.gamesindustry.biz/articles/2017-07-18-how-gacha-can-benefit-western-game-developers>

- Huck, L. (2019, July). Games-law – recent developments in France: The position of the French regulator regarding loot boxes. Retrieved from <https://iot.taylorwessing.com/games-law-recent-developments-in-france-the-position-of-the-french-regulator-regarding-loot-boxes/>
- Khan, I. (2017, November 21). The state of Hawaii investigating EA for "predatory practices". Retrieved March 16, 2020, from <https://www.gameinformer.com/b/news/archive/2017/11/21/the-state-of-hawaii-investigating-ea-for-predatory-practices.aspx>
- Koeder, M. J., & Tanaka, E. (2017, July 30). Game of chance elements in free-to-play mobile games. A freemium business model monetization tool in need of self-regulation? Retrieved February 12, 2020, from <http://hdl.handle.net/10419/169473>
- Koeder, M. J., & Tanaka, E. (2017, July 30). Outline of gacha elements in japanese mobile F2P games [Figure 1]. Game of chance elements in free-to-play mobile games. A freemium business model monetization tool in need of self-regulation? Retrieved February 12, 2020, from <http://hdl.handle.net/10419/169473>
- Kumar, V. (2015, May 20). Making "freemium" work. Retrieved February 24, 2020, from <https://hbr.org/2014/05/making-freemium-work>
- Littler, A., & Hoorn, E. van. (2019, November 20). Gambling 2020: Laws and regulations: Netherlands: ICLG. Retrieved March 19, 2020, from <https://iclg.com/practice-areas/gambling-laws-and-regulations/netherlands>
- Macy, S. (2017, November 11). UK Gambling Commission determines loot boxes aren't gambling under British law. Retrieved February 24, 2020, from <https://uk.ign.com/articles/2017/11/25/uk-gambling-commission-determines-loot-boxes-arent-gambling-under-british-law>
- Makuch, E. (2017, December 12). Loot boxes are not gambling, New Zealand says. Retrieved from <https://www.gamespot.com/articles/loot-boxes-are-not-gambling-new-zealand-says/1100-6455608/>
- New Zealand Department of Internal Affairs. (2019). Prohibited gambling. Retrieved from <https://www.dia.govt.nz/Services-Casino-and-Non-Casino-Gaming-Prohibited-Gambling?OpenDocument>
- Paepe, P. (2019, August 1). Gaming in Belgium: Overview. Retrieved March 19, 2020, from [https://uk.practicallaw.thomsonreuters.com/6-635-9928?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/6-635-9928?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1)
- Porrata, J. (2019, September 6). Gacha hell: The predatory nature of gacha games. Retrieved October 1, 2019, from <https://medium.com/@jrpn777/gacha-hell-the-predatory-nature-of-gacha-games-ab3e7585f163>

Sally M. Gainsbury, Nerilee Hing, Paul H. Delfabbro & Daniel L. King. (2014). A taxonomy of gambling and casino games via social media and online technologies. *International Gambling Studies*, 14:2, 196-213, DOI: 10.1080/14459795.2014.890634

Sally M. Gainsbury, Nerilee Hing, Paul H. Delfabbro & Daniel L. King. (2014). Taxonomy of online gambling-themed activities [Figure 4]. A taxonomy of gambling and casino games via social media and online technologies. *International Gambling Studies*, 14:2, 196-213, DOI: 10.1080/14459795.2014.890634

Schwiddessen, S. (2018, August 2). Loot boxes in Japan: Legal analysis and kompu gacha explained. Retrieved February 24, 2020, from <https://www.lexology.com/library/detail.aspx?g=9207df10-a8a2-4f67-81c3-6a148a6100e2>

Teraoka, D. (2019, June 21). Top 20 anime mobile gacha games of Q1 2019 in Japan and US. Retrieved September 30, 2019, from <https://www.gamepress.gg/top-20-anime-mobile-gacha-games-q1-2019-japan-and-us>.

United Kingdom Gambling Commission. (2005). What is gambling? Retrieved from <https://www.gamblingcommission.gov.uk/for-the-public/What-is-gambling.aspx>

US Legal, Inc. (n.d.). Gambling law and legal definition. Retrieved from <https://definitions.uslegal.com/g/gambling/>

Xue, D. (2020). Relevant social groups according to the social construction of technology. [Figure 2]. Gacha games as a safe form of entertainment (Unpublished undergraduate thesis). School of Engineering and Applied Science, University of Virginia. Charlottesville, VA.

Xue, D. (2020). Venn diagram of some western countries and their position on gacha as gambling. [Figure 3]. Gacha games as a safe form of entertainment (Unpublished undergraduate thesis). School of Engineering and Applied Science, University of Virginia. Charlottesville, VA.

BIBLIOGRAPHY

- Adish Co. Ltd. (2018, October 9). The fine line between gambling and gaming: The short international history of loot box/gacha and regulations for all game devs: CS agents. Retrieved February 24, 2020, from <https://cs-agents.com/blog/history-loot-box-gacha/>
- Akimoto, A. (2012, May 16). Japan's social-gaming industry hindered by government's anti-gambling move. Retrieved from <https://www.japantimes.co.jp/life/2012/05/16/digital/japans-social-gaming-industry-hindered-by-governments-anti-gambling-move#.XnLoq6hKiUk>
- Arif, S. (2018, June 20). The Netherlands starts enforcing its loot box ban. Retrieved from <https://www.ign.com/articles/2018/06/20/the-netherlands-starts-enforcing-its-loot-box-ban>
- Badiane, L., & Bourgeois, M. (2019, November 20). Gambling 2020: Laws and regulations: France: ICLG. Retrieved from <https://iclg.com/practice-areas/gambling-laws-and-regulations/france>
- Bijker, Wiebe. (1987). The social construction of bakelite: Toward a theory of invention. In *The social construction of technological systems: New directions in the sociology and history of technology*, edited by Wiebe Bijker, Thomas Hughes, and Trevor Pinch, 17-50. Cambridge, MA: MIT Press.
- Brown, J. A. (2019-03). Pitching Diablo on the development of marketing, procedural content, and narrative. *ICGA Journal*, 40(4), 417-424. doi:10.3233/ICG-180066
- Board Game Geeks. (n.d.). CCGs (collectible card games). Retrieved September 30, 2019, from <https://boardgamegeek.com/boardgamefamily/6040/ccgs-collectible-card-games>.
- Chalk, A. (2018, May 28). ESA president defends loot boxes, warns against government regulation. Retrieved February 24, 2020, from <https://www.pcgamer.com/esa-president-defends-loot-boxes-warns-against-government-regulation/>
- Famularo, J. (2017, February 2). 'Fire Emblem Heroes' is a gacha game. Retrieved September 30, 2019, from <https://www.inverse.com/article/27267-what-are-gacha-games-fire-emblem-heroes>
- Fong, H. (2019, May 7). Loot box design 2.0 – complying with China's new rules. Retrieved February 24, 2020, from https://www.gamasutra.com/blogs/HenryFong/20190507/342062/Loot_Box_Design_20__Complying_with_Chinas_New_Rules.php
- Freedman, A. E. (2019, August 9). What are loot boxes? Gaming's big new problem, explained. Retrieved October 1, 2019, from <https://www.tomsguide.com/us/what-are-loot-boxes-microtransactions,news-26161.html>.

- Gatto, J. G., & Patrick, M. A. (2018, October 9). The fine line between gambling and gaming: The short international history of loot box/gacha and regulations for all game devs: CS Agents. Retrieved October 1, 2019, from <https://cs-agents.com/blog/history-loot-box-gacha/>.
- Gerken, T. (2018, April 26). Video game loot boxes declared illegal under Belgium gambling laws. Retrieved February 24, 2020, from <https://www.bbc.com/news/technology-43906306>
- Google. (2019). Player stats in android games | Play games services for android. Retrieved from <https://developers.google.com/games/services/android/stats>.
- Han, L. (2017-11). Relationship between shyness and mobile phone addiction in Chinese young adults: Mediating roles of self-control and attachment anxiety. *Computers in human behavior*, 76, 363-371. doi:10.1016/j.chb.2017.07.036
- Heinze Tuesday, J. (2017, July 18). How gacha can benefit western game developers. Retrieved October 1, 2019, from <https://www.gamesindustry.biz/articles/2017-07-18-how-gacha-can-benefit-western-game-developers>
- Huck, L. (2019, July). Games-law – recent developments in France: The position of the French regulator regarding loot boxes. Retrieved from <https://iot.taylorwessing.com/games-law-recent-developments-in-france-the-position-of-the-french-regulator-regarding-loot-boxes/>
- Josef, M., Tanaka, & Ema. (1970, January 1). Game of chance elements in free-to-play mobile games. A freemium business model monetization tool in need of self-regulation? Retrieved September 30, 2019, from <http://hdl.handle.net/10419/169473>.
- Kaneko Y., Yada K., Ihara W. and Odagiri R. (17-20 November 2018). "How game users consume virtual currency: The relationship between consumed quantity, inventory, and elapsed time since last consumption in the mobile game world," *2018 IEEE International Conference on Data Mining Workshops (ICDMW)*, Singapore, Singapore, 2018, pp. 848-855.
- Khan, I. (2017, November 21). The state of Hawaii investigating EA for "predatory practices". Retrieved March 16, 2020, from <https://www.gameinformer.com/b/news/archive/2017/11/21/the-state-of-hawaii-investigating-ea-for-predatory-practices.aspx>
- Koeder, M. J., & Tanaka, E. (2017, July 30). Game of chance elements in free-to-play mobile games. A freemium business model monetization tool in need of self-regulation? Retrieved February 12, 2020, from <http://hdl.handle.net/10419/169473>
- Koeder, M. J., & Tanaka, E. (2017, July 30). Outline of gacha elements in japanese mobile F2P games [Figure 1]. Game of chance elements in free-to-play mobile games. A freemium

- business model monetization tool in need of self-regulation? Retrieved February 12, 2020, from <http://hdl.handle.net/10419/169473>
- Kumar, V. (2015, May 20). Making "freemium" work. Retrieved February 24, 2020, from <https://hbr.org/2014/05/making-freemium-work>
- Limelight Networks. (2018, January 14). The state of online gaming – 2018. Retrieved from <https://www.limelight.com/resources/white-paper/state-of-online-gaming-2018/>.
- Littler, A., & Hoorn, E. van. (2019, November 20). Gambling 2020: Laws and regulations: Netherlands: ICLG. Retrieved March 19, 2020, from <https://iclg.com/practice-areas/gambling-laws-and-regulations/netherlands>
- Macey, J. (2019). The games we play: Relationships between game genre, business model and loot box opening. CEUR workshop proceedings, 2359, 193-204.
- Macy, S. (2017, November 11). UK Gambling Commission determines loot boxes aren't gambling under British law. Retrieved February 24, 2020, from <https://uk.ign.com/articles/2017/11/25/uk-gambling-commission-determines-loot-boxes-arent-gambling-under-british-law>
- Makuch, E. (2017, December 12). Loot boxes are not gambling, New Zealand says. Retrieved from <https://www.gamespot.com/articles/loot-boxes-are-not-gambling-new-zealand-says/1100-6455608/>
- New Zealand Department of Internal Affairs. (2019). Prohibited gambling. Retrieved from <https://www.dia.govt.nz/Services-Casino-and-Non-Casino-Gaming-Prohibited-Gambling?OpenDocument>
- Nordmark, S. (2018, October 20). Legislators are targeting loot boxes, here's why. Retrieved October 1, 2019, from <https://dotesports.com/business/news/legislators-are-targeting-loot-boxes-heres-why>.
- Paepe, P. (2019, August 1). Gaming in Belgium: Overview. Retrieved March 19, 2020, from [https://uk.practicallaw.thomsonreuters.com/6-635-9928?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/6-635-9928?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1)
- Porrata, J. (2019, September 6). Gacha hell: The predatory nature of gacha games. Retrieved October 1, 2019, from <https://medium.com/@jrpn777/gacha-hell-the-predatory-nature-of-gacha-games-ab3e7585f163>
- Sally M. Gainsbury, Nerilee Hing, Paul H. Delfabbro & Daniel L. King. (2014). A taxonomy of gambling and casino games via social media and online technologies. *International Gambling Studies*, 14:2, 196-213, DOI: 10.1080/14459795.2014.890634

- Sally M. Gainsbury, Nerilee Hing, Paul H. Delfabbro & Daniel L. King. (2014). Taxonomy of online gambling-themed activities [Figure 4]. A taxonomy of gambling and casino games via social media and online technologies. *International Gambling Studies*, 14:2, 196-213, DOI: 10.1080/14459795.2014.890634
- Sandoval, A. (2018, November 13). Loot boxes and gacha games dubbed newest forms of gambling. Retrieved October 1, 2019, from <http://borderzine.com/2018/11/loot-boxes-and-gacha-games-dubbed-newest-forms-of-gambling/>.
- Schwiddessen, S. (2018, August 2). Loot boxes in Japan: Legal analysis and kompu gacha explained. Retrieved February 24, 2020, from <https://www.lexology.com/library/detail.aspx?g=9207df10-a8a2-4f67-81c3-6a148a6100e2>
- Teraoka, D. (2019, June 21). Top 20 anime mobile gacha games of Q1 2019 in Japan and US. Retrieved September 30, 2019, from <https://www.gamepress.gg/top-20-anime-mobile-gacha-games-q1-2019-japan-and-us>.
- TheSum (2019). Partners. Retrieved November 1, 2019, from <https://www.thesum.org/partners/4590821181>.
- United Kingdom Gambling Commission. (2005). What is gambling? Retrieved from <https://www.gamblingcommission.gov.uk/for-the-public/What-is-gambling.aspx>
- US Legal, Inc. (n.d.). Gambling law and legal definition. Retrieved from <https://definitions.uslegal.com/g/gambling/>
- Winner, L. (1993). Upon opening the black box and finding it empty: Social constructivism and the philosophy of technology. *Science, Technology, & Human Values*, 18(3), 362-378. Retrieved from <http://www.jstor.org/stable/689726>
- Xue, D. (2020). Relevant social groups according to the social construction of technology. [Figure 2]. Gacha games as a safe form of entertainment (Unpublished undergraduate thesis). School of Engineering and Applied Science, University of Virginia. Charlottesville, VA.
- Xue, D. (2020). Venn diagram of some western countries and their position on gacha as gambling. [Figure 3]. Gacha games as a safe form of entertainment (Unpublished undergraduate thesis). School of Engineering and Applied Science, University of Virginia. Charlottesville, VA.
- Zendle, D. (2020-01). Paying for loot boxes is linked to problem gambling, regardless of specific features like cash-out and pay-to-win. *Computers in human behavior*, 102, 181-191. doi:10.1016/j.chb.2019.07.003