Review of Addictive Product Experience via Gamified Motivation Models

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Abstract

There are still some essential differences between the gamification design framework and user experience design. The user experience might want to pull through the full-range experience node to minimise the cost to achieve the experience improvement. Instead, gamification design emphasises the extreme sensation (pleasure / suffer) during the interaction. The gamification design framework is far more than just the eight-core driving forces (Octalysis) and the concept of the growth cycle. Different user types should have different user paths, driving forces, and reward mechanisms based on different business goals. This study is proposing various ways of thinking and models in product gamification such as behaviour model and hook model. The success of each product gamification is relying on different historical context and market factors. These successes cannot be replicated in the same way as the formula. If it is too challenging to define different core drives suitably, at least the developer could adopt this comprehensive and systematic way of thinking to evaluate whether your product or service meets this model concept.

Key words: Behaviour Model, Gamification, Hook Model, Motivation Model, Product Addiction
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Introduction

According to a recent research, any given individual will check their phone on an average of 63 times a day (Dobrescu, Obreja, Vochin, Dobrescu & Halichidis, 2019). Modern people spend a mindless number of hours scrolling through their social media feeds (Facebook, Instagram and others), playing mobile games and all to repeat the cycle a mere few minutes later (Blackwell, Leaman, Tramposch,Osborne & Liss, 2017). But why do people do it? What makes people satisfy by repeating the same activities? The charm of Facebook, Instagram, and games is so powerful that it makes them a part of our lives and even makes some users uncomfortable without using them. Are these behaviours occur triggered by those social media/game? Else human tends to have such habit while those social media/game filled in at the right moment? As what Schell (2014) said, games or parts of the game will invade every individual's daily lives thus transform goods and services into more captivating interactive experiences. Individuals will be proactive, efficient and happy to spend as little effort as possible to get more rewards. Although gamification is relatively a new concept, it has developed a solid momentum in recent years.

Behaviour Model V.S. Hook Model

a. Behaviour Model

Game design is an area that aggregates the minds and behaviours of users. Peter, Pfund, Whelan & Meyers (2019) studied good games are addictive. The application of Csikszentmihalyi's flow concept in games enable player to enjoy the gaming process by achieving balance between game challenges and player skill (Sweetser, Johnson & Wyeth, 2012). Research indicated that experienced game designers or developers are well aware of human weaknesses and are good at taking advantage of human

weaknesses to design addictive gaming experiences (Andreassen, Billieux, Griffiths, Kuss, Demetrovics, Mazzoni & Pallesen, 2016). Excellent games are addictive, so are great products; gamification comes into the piece to serve the purpose. It draws on the relevant methods of game design by adopting human nature as the core, motivating the users, and thus developing behavioural habits to allow users to continuously use it and pay instinctively if needed. Here is the product experience pyramid adapted from Azure Yang in Design Mind Public (2014).
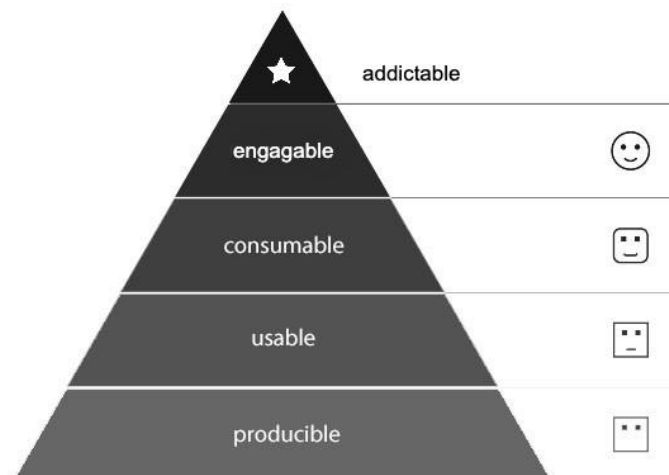
Figure 1: Product Design Pyramid Based on User Behaviour

Usability will no longer be the only goal of products: those products will absorb, adapt and become "engagable." Rebaudengo, Aprile & Hekkert (2012) reviewed functions and features make user lives easier; experiences and relationships make user happier. Most user experience (UX) designers pay attention to the product's usability and ease of use. Besides, the users also need to consider how to make users voluntarily use the product. A core idea that runs through the entire gamification design, behaviour model formula has suggested as:

Behaviour = Motivation * Ability * Trigger (Alter, 2017)

Through timely guidance and reminders, let users make the desired action, and through repeated operations, this behaviour is solidified into user habits. This formula shows that the generation of every

Table 1. Product Design Based on User Behaviour. Source: Fogg, 2009

Level	Description
Producible	Verify the functional feasibility of the product, and it is also the most basic stage of product development.
Usable	Increase the product from functional feasibility to functional verifiability. Most products in the market belong to this stage.
Consumable	The value-added for products, from "available" to "desire to consume" are mostly empowered by desig Generally, this stage is already a well-known product in the market, and this is where the typical UX Designer plays its value.
Engagable	Products or applications that can reach this stage are already phenomenal, and their appearance will basically be accompanied by changes in user habits or changes in the market ecology.
Addictable	Products that create sense of curiosity, scarcity and uncertainty. Addictive technology and the rise of business model fascinates us and irresistible, such as gambling (Fogg, 2009).

human behaviour is based on the variables of motivation, ability and trigger. The core concept of this set of behaviour model theories is to use the three variables to create engaging yet addictive products.

b. Hook Model

As technology becomes increasingly available to entrepreneurs of all backgrounds, the design has become just as important as engineering. Correspondingly, all entrepreneurs should have a good understanding of the principals behind building habit-forming products via behavioural model. Speaking of behavioural models, Eyal's Hook Model is one of the most representative (2014).
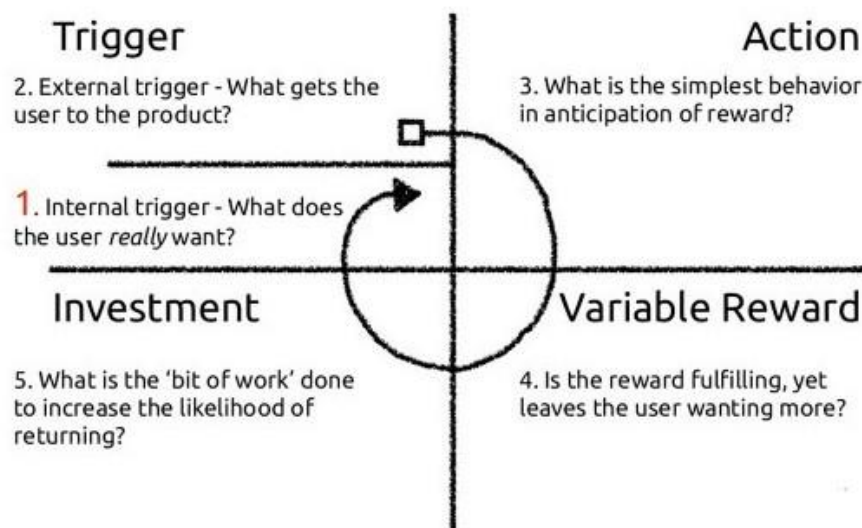

Figure 2: Hook Model

As shown in figure 2 (Eyal, 2014), it is a four-step process embedded into the products of many successful companies to subtly encourage customer behaviour. Through consecutive "hook cycles," these products reach their ultimate goal of bringing users back again and again without depending on costly advertising or aggressive messaging. It also served as a behavioural addiction model. The basic idea is that, to create habit-forming products, the product designer must move a user through a loop that over time to help the consumer develop the habit of returning and using the product.

Four behavioural stages, through "Trigger, Action, Variable Reward", to allow users to develop addictive habits in the process of using the product (similar to training pets) (Van Eijk, 2015). The "action: behaviour model" is based on the behaviour model formula. Similar to the gamification design framework, Hook Model, Behaviour Model or other behavioural models, its share a common core goal - stimulate user autonomy and allow users to spontaneously do the desired behaviour of the product. From psychology studies by Mercier and Sperber (2017), human tends to understand and believe in life is that everything happens for a reason. Regardless this thought is valid or meaningless. This phenomenon usually triggers user motivation to accomplish certain behaviour with particular abilities. For most behavioural models, the source of the reason behind (motivation) is more driven by the deep consciousness of the user, which is uncontrollable and unpredictable. Due to those constraint, Behaviour Model focuses on Ability and Trigger. In the context of gamification, emotion manipulation and motivation are the keys that truly create addiction and immersion. After all, the gamification still fails to achieve the goal if the user refuses to use it (regardless of how well the game design)(Robson, Plangger, Kietzmann, McCarthy & Pitt, 2016). Therefore, it becomes the core of the entire gamification design framework by amplifying the user's deep consciousness and motivation (Conway, 2014).

Table II. Hook Model Based on Youtube Context

Level	Description
Trigger	This is either external, (a "Play" icon/button in the middle of the video), or internal, (a subconscious urge that happens when the user is browsing through the video itself).
Action	Something that happens when the user expects a reward. For example, scrolling through the list of videos in Youtube.
Variable Reward	The reward for the user changes on context but provides an opportunity for the user to be hooked. For instance, Youtube provide you with a combination of content that you want to see, along with other elements the network thinks you might like.
Investment	By mixing the three previous elements, the user now has the ability to feed back into the network to make it part of their routine. This ensures they not only want to come back for the content, but they have a vested interest in doing so.

Eight Core Drives of The Gamification Design Framework
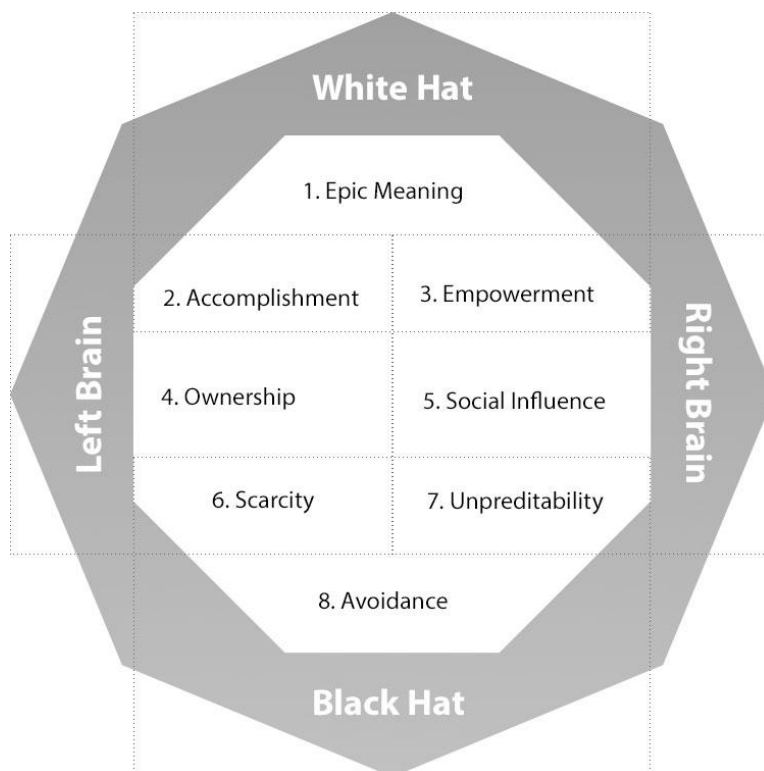
Figure 3: Octalysis - 8 Core Drives

Octalysis framework from Chou (2015) has identified as the most appropriate gamification framework to be applied in this study. This framework suggests that gamification term as adopted by the industry be replaced with "human-focus-design". According to Chou (2019), human motivation is the priority to shape the system design. It could be found in Kim (2013) studies that several of the eight-core driving forces of the gamification design framework have taken advantage of human weaknesses. Amplify the intensity of motivation in the subconscious through amplification, scarcity, and incentives, and arouse users' spontaneous behaviours as the basis for the entire growth system or addictive products (Dermeval, Albuquerque, Bittencourt, Vassileva, Lemos, da Silva & Paiva, 2018).

Table III. Octalysis 8 Core Drives & Application

Core Drive	Description	Example
Epic Meaning	Promote, fulfil social responsibility, or subconsciously consider it more important than yourself.	Urban Dictionary, Wikipedia is a driver of this type, giving users a sense of responsibility to complete public missions.
Accomplishment	Ability to continuously make progress and achieve achievements in it, and to be superior in comparison.	Nike + gets all belong to this type, all points, medals, achievement systems, leaderboards and other elements use this concept as the core driving force.
Empowerment	Allow your ideas to be accepted by the public and make yourself uniquely important.	Tiktok belongs to this type of driving force. The evaluation and recommendation mechanisms in UGC (User Generated Content) are all amplifying the strength of this driving force.
Ownership	Reveal your uniqueness and class through having a higher rank and more power/feature.	The popular Candy Crush Saga amplifies this driving force through game mechanism.
Social Influence	Human is inherently deficient in wishing to integrate into the group, creating affinities through relationships and connections.	Second Life and Linkedin are the embodiment of this driving force. Looking for social identity or social wealth is to hope for connectivity.
Scarcity	What you can't get is always the best. If you miss it, you can't miss it.	Limited-time discounts, great promotions, and top-up treasures are the nakedness of this driving force, and it is also the core driving force of the most extensive business and experience.
Unpredictability	Most modern people suffer from FOMO disease (Fear of Missing Out). Unknown content and gossip best satisfy curiosity, and users are afraid that they will miss any message/feed.	Scrolling on Facebook wall/ Instagram stories / Twitter feed is a good example.
Avoidance	Negative emotions, fear of loss, soothing mood away from stress, sunk cost.	Hunger marketing and progress lost both make good use of the user's loss psychology and combine the two types of drivers 04 and 06 to form a relatively more complex and powerful subconscious driver.

Invoking Different Core Drivers Based on Player/User Journey Integration

In addition to inspiring and amplifying the original motivation, different core driving forces have their dedicated life cycles. Based on Nenonen, Rasila, Junnonen and Kärnä's (2008)studies, gamification framework emphasis the cycle of end-user growth system / customer journey (The Novice - The Apprentice- The Journeyman - The Master). Therefore, in the different moment, the core driving force could be swapped through some mechanisms to continuously motivate users, so that the life cycle of the product can be extended, and habitual addiction can be achieved.

The gamification design framework with mental cognition as the driving core is essentially a behaviour manipulation that focusing on the behaviour trigger and the development of psychological habits (Chou, 2015). To apply such a gamification-driven concept to the real world as a basis for improving products or services, it is necessary to combine the user experience with the user/consumer journey (Marquez, Downey & Clement, 2015). Applying different core driving forces at different stage to continue invoke the spontaneity of user usage/consumption. According to the division of user experience and usage journey, the growth cycle can be roughly divided into several stages in the figure below:

Figure 4: Gamification Framework — Life Cycle / Customer Journey

TABLE IV. Gamification Life Cycle Map with Octalysis Framework

Stage	Drive Force	Example
Discovery	Unpredictability Scarcity Epic Meaning	Registration Rewards (welcoming points) Member Privileges (member day) Online Random Rewards (online gift, random rewards) Exclusive Rights (elite)
Novice	Accomplishment Social Influence Epic Meaning	Mentor Missions (appointment mechanism, development building) Mission Rewards (mini-missions, ability evolution) Achievement Sharing (moment of victory, accomplishments) Personal Achievements (unlock medals, ranking status)
Learning Scaffolding	Accomplishment Avoidance Epic Meaning Empowerment	Competence (leaderboards, achievement) Sunk costs (fear of loss, missed growth Belief Economy (fan economy) Instant feedback (Like, follow, cash back reward)
Habitual Addiction	Ownership Avoidance Epic Meaning	Competitive Glory (Leaderboards, Elite Achievements) Mission Meaning (Target Development, Reality Linkage) Sovereignty Declaration (Exclusive Capabilities, Cost of Loss) Impact Creation (Social Impact)

a. Discovery

The experience of a product or service starts when the user first "contact" and this time is also the golden period to engage users to the product or service (Lantos, 2015).

b. Novice

Users first contact the product, use the product or service to reach the first reward state (Win-State). The focus of this period is to clarify the positioning of the product, help users quickly understand how to use the product, and guide how to get rewards (Chief & Officer, 2016).

c. Learning Scaffolding

According to Ertmer & Glazewski (2015), users /consumers begin to understand the rules of use and begin to reach multiple rewards in the process (preliminarily addiction creation). Since the user has tasted the first reward, the focus during this period is to maintain the user's daily activities, get as much reward as possible through the ability of initial learning, and at the same time help users understand the product or service better.

d. Habitual Addiction

Have explored all the rules and states, and do not care about rewards, but have also developed a habit of use (producing addictive habits) (Wood & Neal, 2009). The emphasis in this period is no longer on rewards, instead on how to retain loyal users and extend the life cycle as much as possible. The difficulty of the final game is how to give users meaning or excitement.

Conclusion

Gamification design can't be successful according to the basics principle. Most of the product designers only use the superficial meaning of the core driving force (Octalysis) without actually mobilising the potential consciousness of the user. To sum up, the key factor in the addiction model is behaviour, which in turn is driven by abilities, incentives, and motivation (Peter, Calvo & Ryan, 2018). Motivation in behaviour is the key core of product gamification design (Richards, Thompson & Graham, 2014). Therefore, the key to trigger users to be addicted to gamification is how to use motivation appropriately. For long-term user-product engagement, product designer and UX designer must further study in the scope of intrinsic motivation instead of extrinsic motivation based on gamification concept (Mitchell, Schuster & Drennan, 2017).

Acknowledgement

References
Alter, A. (2017). *Irresistible: The rise of addictive technology and the business of keeping us hooked.* Penguin.

Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of Addictive Behaviors, 30*(2), 252-260.

Blackwell, D., Leaman, C., Tramposch, R., Osborne, C., & Liss, M. (2017). Extraversion, neuroticism, attachment style and fear of missing out as predictors of social media use and addiction. *Personality and Individual Differences, 116,* 69-72.

Chief, L. L. F. M. S., & Officer, M. (2016). Being Strategy: From Positioning to Confirmation. *Marketing For Competitiveness: Asia To The World-In The Age Of Digital Consumers, 123-125.*

Chou, Y. K. (2015). *Octalysis: Complete gamification framework.* Acesso em,

Chou, Y. K. (2019). *Actionable gamification: Beyond points, badges, and leaderboards*. Packt Publishing Ltd.

Conway, S. (2014). Zombification?: Gamification, motivation, and the user. *Journal of Gaming & Virtual Worlds, 6*(2), 129-141.

Dermeval, D., Albuquerque, J., Bittencourt, I. I., Vassileva, J., Lemos, W., da Silva, A. P., & Paiva, R. (2018, June). Amplifying teachers intelligence in the design of gamified intelligent tutoring systems. *In International Conference on Artificial Intelligence in Education (pp. 68-73). Springer, Cham.*

Dobrescu, L., Obreja, S., Vochin, M. C., Dobrescu, D., & Halichidis, S. (2019, November). New Approaches for Quantifying Internet Activity. *In 2019 E-Health and Bioengineering Conference (EHB) (pp. 1-4). IEEE.*

Ertmer, P. A., & Glazewski, K. D. (2015). Essentials for PBL implementation: Fostering collaboration, transforming roles, and scaffolding learning. *Essential readings in problem-based learning, 4,* 89-106.

Eyal, N. (2014). *Hooked: How to build habit-forming products.* Penguin.

Fogg, B. J. (2009, April). A behavior model for persuasive design. *In Proceedings of the 4th international Conference on Persuasive Technology (pp. 1-7).*

Kim, S. (2013). Fundamental strategic approach for gamification: how to start a gamification in your organization. *International Journal of Digital Content Technology and its Applications, 7*(12), 48-54.

Lantos, G. P. (2015). *Consumer behavior in action: Real-life applications for marketing managers. Routledge, 326-328.*

Marquez, J. J., Downey, A., & Clement, R. (2015). Walking a mile in the user's shoes: Customer journey mapping as a method to understanding the user experience. *Internet Reference Services Quarterly, 20*(3-4), 135-150.

Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of Addictive Behaviors, 30*(2), 252-260.

Mercier, H., & Sperber, D. (2017). *The enigma of reason*. Harvard University Press.

Mitchell, R., Schuster, L., & Drennan, J. (2017). Understanding how gamification influences behaviour in social marketing. *Australasian Marketing Journal (AMJ), 25*(1), 12-19.

Nenonen, S., Rasila, H., Junnonen, J-M, Kärnä, S. (2008) *Customer Journey –a method to investigate user experience. In CIB Report 316: Usability of Workplaces: Phase 2. International Council for Research and Innovation in Building and Construction (CiB), CiB General Secretariat, Rotterdam, 52-61*

Peters, D., Calvo, R. A., & Ryan, R. M. (2018). Designing for motivation, engagement and wellbeing in digital experience. *Frontiers in Psychology, 9,* 797-805.

Peter, S. C., Li, Q., Pfund, R. A., Whelan, J. P., & Meyers, A. W. (2019). Public stigma across addictive behaviors: Casino gambling, Esports gambling, and internet gaming. *Journal of gambling studies, 35*(1), 247-259.

Rebaudengo, S., Aprile, W., & Hekkert, P. (2012). Addicted products, a scenario of future interactions where products are addicted to being used. In Out of control: *Proceedings of the 8th international conference on design and emotion (pp. 1-10).*

Richards, C., Thompson, C. W., & Graham, N. (2014, October). Beyond designing for motivation: the importance of context in gamification. *In Proceedings of the first ACM SIGCHI annual symposium on Computer-human interaction in play (pp. 217-226).*

Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I., & Pitt, L. (2016). Game on: Engaging customers and employees through gamification. *Business horizons, 59*(1), 29-36.

Schell, J. (2014). *The Art of Game Design: A book of lenses.* CRC press.

Sweetser, P., Johnson, D. M., & Wyeth, P. (2012). Revisiting the GameFlow model with detailed heuristics. Journal: *Creative Technologies, 2012(3),* 2-3.

Van Eijk, R. M. (2015, May). Requirements for relaxation coaching-a formalization of the Fogg behavior model. *In International Conference on Information and Communication Technologies for Ageing Well and e-Health (Vol. 2, pp. 31-36). SCITEPRESS.*

Wood, W., & Neal, D. T. (2009). The habitual consumer. *Journal of Consumer Psychology, 19(4), 579-592.*

Yang, A., Rebaudengo, S., Yang, R., & Rabaudengo, S. (2014). When Objects Talk Back. *Design Mind. Retrieved from https://www.frogdesign.com/designmind/when-objects-talk-back/*