

Sesame Credit

Social Compliance Gamification in China

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Abstract— Sesame Credit is the gamified Chinese social credit. It aims at monitoring and controlling the behavior of more than a billion citizens until 2020. Basing itself on the distribution of rewards and punishments to individuals, upon scoring based on the compliance of the aforementioned citizens towards laws and government interests. The present study probes Sesame Credit from data collected from academic papers, Chinese government official documents, as well as media articles. An interpretative analysis is conducted based on the Octalysis method of gamification and the motivational method known as the Self-Determination Theory. Residing as main conclusions: a) the efficiency of the Sesame Credit depends on extensive and continual monitoring of the population by the Chinese government; b) despite the coercive aspects, such gamification is observed to be as popular in China, due to a millenary tradition of people's compliance to the social and those of authority obedience.

Keywords— *Sesame Credit; Gamification; Social Credit; China.*

I. INTRODUCTION

Digital technologies also innovate in monitoring human behavior procedures. The social and political consequences of such innovations, on the other hand, have become a focal point in criticism as it allows for more efficient procedures of social control. In such context the emerging of the Sesame Credit is witnessed, the social credit system endorsed by the Chinese government, which is to become compulsory to the country's entire population in 2020 [1], which apply gamification principles, that is, "the use of game design elements in non-gaming contexts" [2]. Sesame Credit bestows gifts by means of user conformity to the Chinese government in regards to law abidance, consumption habits, ethical standards, etc. Such Social Conformity brews legitimate concerns and critiques as to the exploitation of gamification to be used as a means to social control [3].

The present article has as its main objective to offer an analysis and well-founded reflection regarding the Sesame Credit and its meaning as an instrument of monitoring and control of individuals in society. As secondary purposes of the study here are also: a) analyze the mechanics of Sesame Credit inducements, highlighting the problematic aspects according to the methodological principles of gamification; b) muse the reasoning which explains the effects of the Sesame Credit in the Chinese population.

In order to accomplish such research goals, given the impossibility of direct observation as well as tests, proceeding from a review of academic papers, Chinese government official documents and media articles about the Sesame Credit. The analysis of the data collected will be based on the Octalysis method of gamification, chosen as an analytical reference complementary to the Self-Determination Theory whilst a conceptual instrument.

II. THEORETICAL FRAMEWORK

Divided into two sections, one of gamification and the other one about the Sesame Credit, the theoretical framework is as follows.

A. Gamification

This subsection introduces the concept of gamification, the development methodology, and the motivational theoretical model, professionally employed by the author, which are used to analyze the Sesame Credit.

"Gamification" is a neologism coined by Nick Pelling, a game designer, in 2002, to name the use of common game techniques to boost digital marketing in web portals [4]. Pelling referred to techniques such as scoring, medal progress bars, missions, etc. Nowadays, gamification, as it is best known in Brazil as the process of "making services and products attractive as games, is" [5].

Yu Kai Chou, an American pioneer in gamification, prefers to emphasize the role of motivational psychology in the field, and for such, explaining it as "human-centered design" [6], that is, a procedure to forecast services and products using scientific knowledge about human behavior.

A gamification strategy has as a goal to reinforce certain desired behaviors in a target audience, or preclude undesired behaviors. A quintessential example of the first style of gamification is the language learning portal Duolingo, which applies playful techniques with score counting, medals, missions and ranking among other techniques aiming at teaching languages [7]. As an example of the gamification of the second style is present in [8] study, about the use of playful techniques to aid people who wish to stop smoking.

Reference [9] designate that the efficiency of a gamification of a strategy depends not only on the rules but also on the incentive employed in two other aspects: "the



context in which gamification is applied and the users involved in the process" (p.1), namely, an environment which allows result monitoring and users interested in gamification.

B. The Octalysis methodology

Developed by Chou [10], the Octalysis consists of a methodology of generation and development of gamification strategies. The author, who was, for years a game designer in California, works currently as a gamification adviser, draws a set of eight essential motivations. In other words, ways to engage a user presented visually as an octagon:



Fig. 1 The Octalysis model. Source: The author, based on [10].

Each of the eight forms of engagement presented in Fig. 1, has in itself, its own series of techniques, amassing to ninety-two techniques indexed by Chou [10]. Therefore, for instance, after establishing through research that the target audience is chiefly motivated by the desire of empowerment in order to avoid problems, a gamification designer must resort to available techniques in the "Empowerment" center, (such as power-ups, that is, special advantages conquered on special occasions); in addition to it the techniques of the "Avoidance" (such as rightful heritage, which consists of disengaging what may be lost, in case they do not perform).

Furthermore, according to Fig 1, the Octalysis model also organizes the octagon centers under two other criteria.

- The upper centers (Achievement, Meaning and Empowerment) constitute the White Hat area, i.e., involves motivation techniques based on rewards for desired actions, being associated with positive emotions, such as happiness and fulfillment;
- The lower centers (Scarcity, Avoidance, and Unpredictability), constitute the Black Hat area, involving motivation techniques based on not losing assets for desired actions and exploit feelings such as fear and anxiety;
- The left centers (Achievement, Ownership, and Scarcity) form the "Left Side" of the Octalysis, involving motivation techniques which urge to logic and reasoning, being further associated with quantitative aspects, like scoring;

- The right centers (Unpredictability, Social Influence, and Empowerment), on the other hand, exploits motivation techniques appealing essentially to creativity and emotions, being, therefore, more associated with qualitative aspects, such as special conditions.

To Chou a good gamification strategy uses the needed Octalysis centers to reach its goals, taking the profile of the target audience into consideration. The author recommends moderation in using the techniques of the Black Hat area but also warns that likewise, the abuse of the White Hat area techniques can lead to technical as well as ethical problems. According to [11], gamification strategies that explore people, compelling them to do contrary to their desires, eventually, provoke insurgency and users sabotage, being effective only as short term strategies.

C. Self-Determination Theory

Gagné e Deci [12], two researchers in the field of Cognitive Psychology, recounts that the Self-Determination Theory (SDT) was being developed in 1960 from studies on human motivation which gravitates around the intrinsic and extrinsic aspects of rewards. According to [13], intrinsic motivation occurs when a task is accomplished and it is a rewarding activity in itself, and extrinsic when the indirect act of reward can generate consequences that produce a motivational aspect. In other words, for instance, working out of love for the work is an example of intrinsic motivation, and work intending to receive a salary for it is extrinsic motivation.

The SDT entails that people are fundamentally active and moved by three yearnings: for autonomy, for mastery or for technical excellence; for creating bonds in belonging, that is, social relations [14]. From then on, the SDT establishes 6 motivation bands, from "non-motivated" (when the person acts only through coercion) up until "intrinsically motivated" (when the action is better explained through autonomy, the search for mastery, and social relations originated from the agent). Fig. 2 introduces the six motivational level bands according to the SDT:

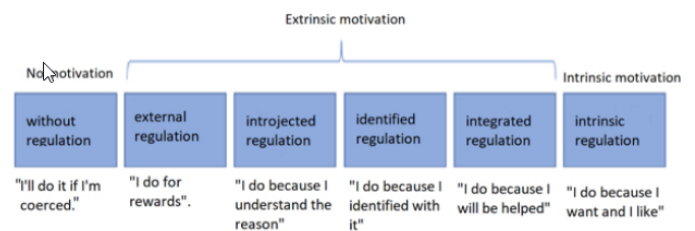


Fig. 2 The six bands of motivation in terms of rule compliance. SOURCE: [13].

The SDT stipulates that motivation and extrinsic can co-exist. For instance, a person may work both motivated because it loves its work (in Image 2, the "Intrinsic Regulation" band) and for the salary (in Image 2, the "External Regulation" band). Yet, according to the SDT, it is more desirable to promote intrinsic motivation in most cases [13], to promote the individual pursues autonomy, attain mastery and strengthening of social connections.

D. Sesame Credit as gamification

In the present subsection, the grounds for the Chinese gamified social credit will be demonstrated. To understand the Sesame Credit it is necessary to first understand the context which made it possible. China has a rich millenary tradition based predominantly in Confucius philosophy, prevailing for over 2300 years in the country and exhorts obedience to authority and the pursuit of balance and social conformity in consonance with the hierarchy of traditional roles [15]. Confucius designated three elements of a sound governance: credit, (信), which can also be translated as “faith” and “sincerity”, food (食) and army (兵); being the first and most important, which makes “credit / faith / sincerity” the key concept in Chinese governance [16].

Since the Mao Tse-Tung revolution, in 1949, the country is ruled by the communist party. “That government introduced the working cooperative, the danwei (单位, translated as ‘Work Unit’), which began to log personal performance and behavior of each worker in a system known as “dàng’àn” (档案, which can be translated as “personal records”). The system evolved throughout the years until each Chinese citizen depended on its own digital dàng’àn in order to obtain work, or a promotion d[17]. The subject record dàng’àn can be seen as Sesame Credit’s forerunner, however different from before dàng’àn access was restricted to the government, while the Sesame Credit discloses the information to the whole of the population [16].

The Chinese government publicized the Sesame Credit as a mean to “strengthen the sincerity in government businesses: commercial sincerity, social sincerity, and judicial credibility” [18]. It is asserted in this Chinese Communist Party document that the Sesame Credit seeks to accomplish to the Chinese government as well as society, the following principles: “honesty” (政务诚信), “commercial integrity” (商务诚信), “social integrity” (社会诚信), and “judicial credibility” (司法公信).

The current politics and ancient Chinese philosophy can explain why the concern with privacy and state control does not appear, among Chinese citizens, as a relevant topic. According to [1], and [19] studies show the Sesame Credit’s high index of approval by part of the population, especially those urban and younger citizens. These same, still accordingly to [1], claim commercial and financial advantages originated from social credit to explain the voluntary and enthusiastic accession to the credit system.

The popularity of Sesame Credit can also be explained by China’s current consumer habits. According to [20], in his online course “Doing business with China”, from the Chinese University of Hong Kong, describes as China always had little or no social mobility, and how this has been changing with modernization in the last few decades. In the course’s fifth class, Kwan interviews the Psychology professor Chi-yue Chiu concerning the “Lay Elitism”, which Chiu explains with the belief that by flaunting the typical consumer of a higher class, an individual tends to be accepted in the sphere of the aforementioned higher class. The “Lay Elitism”, is, therefore a

way to commission social conformity to promote socio-economic boost.

E. How Sesame Credit works

For “credit”, in the financial as well as commercial context, it is understood for a quantitative amount which estimates how reliable a person or institution is regarded to honoring commitments, such as payments and debt [21]. According to [22], the traditional manner in which to evaluate an individual’s credit is by its financial history, considering payments, debts, default payments, etc.. The authors uncover as social credit, a new evaluation model, which considers, “beyond financial history, behavioral aspects, such as consumer habits, lifestyle, communication online, etc.” (p. 3).

O Sesame Credit, in its original language, 芝麻信用 (pronounced as “Zhima Credit”), is the gamified social credit system in China. Created by Ant Financial, a subsidiary of the Alibaba Group, the e-Commerce branch of the Tencent conglomerate, (which, among other things is the largest gaming company in the world). The name “Sesame Credit” is an allusion to the legend of Ali Baba. In the story “Open Sesame!” is the password needed to access a cave filled with treasures. Comprising massive Big Data systems, Sesame Credit aims at “strengthen laws and regulatory and political processes through the employment of information technology” [23]. Reference [1], however, indicates the system targets to “generating benefits and promote honest transactions in economy and society instead of violation of privacy”.

Launched in January 2015, the Sesame Credit aims at reaching 1.4 billion Chinese users until 2020, when is set to become mandatory to all people in China [1]. In addition to financial history and consumer habits, Sesame Credit also considers “legal regulations, moral as well as professional and ethical” [22]. Sesame Credit’s scoring system is based on five indicators, as Fig. 3 shows below:



Fig. 3 Graphical User Interface of the Sesame Credit displaying indicators used to evaluate citizens. SOURCE: [24].

In image 3 is possible to observe, on the left-hand part of the image, the general scoring. It varies between 300 and 900 points. On the right-hand part of the page, the five indicators which form a general scoring which, according to the article of Wired magazine [24] functions in an opposite fashion to TABLE 1:

TABLE I. SESAME CREDIT INDICATORS. SOURCE: ADAPTED FROM [24].

Indicator	Description
1 - Demographic characteristics	Age, sex, address, etc..
2 - Economic growth potential	Prediction based on educational and professional history.
3 - Financial History	Payments, debts, default payments, etc..
4 - Consumer Preferences	Purchasing Chinese products rather than imported products, for instance, increases this indicator. The opposite also applies to the situation.
5 - Relationships in social media	Scoring attributed according to the average of people to whom the user connects to online; and the conformity of user's posts to the interests of the Chinese government.

Table 1 demonstrates how, beyond objective criteria on credit analysis (elements 1, 2 and 3 mentioned above), the Chinese government also uses data related to personal habits (element 4) as well as social relationships (element 5). Still, according to the Kobie piece on Wired magazine, the scoring obtained grants prizes, such as shopping discounts, priority customer services in stores and even in hospitals. A low score, on the other hand, withdraws rights, such as purchasing airline and railway tickets [25].

According to [26], the Sesame Credit represents the gamified trust of the government towards its citizens. The author also emphasizes that until 2017, there was no scientific literature about the consequences of such far-reaching gamification processes.

Fig. 4 summarizes the operation of the Sesame Credit in terms of the nature of the user data which are analyzed to generate the score of the five indicators shown in Table 1; and also, the consequences of the scoring regarding government rewards and punishments:



Fig. 4 Sesame Credit rewards and punishment mechanics of personal data conversation. SOURCE: adapted from [32].

The generating items in each of the five fields in Fig. 4, still according to [27], are: 1) tax payment history, existence of debt, default payments, accounts receivable, etc.; 2) compliance with local and national regulations and laws,

partaking in voluntary work, accession to government programs, etc.; 3) online purchase history, friendship and connections on social networks, “reliability” in social media posting, etc.; 4) access to certain public services, priority in customer services in stores as well as in hospitals, high speed Internet access, university admission, etc.; 5) hindrance to participating in civil service examinations, barred from purchasing airline and/or railway tickets, barred from seeking accommodation in luxury hotels, etc.

Taking a more positive approach in regards to the Sesame Credit, it is possible to find researchers such as [[1], who mentions that the system creates a more reliable society for it is based on data. Allowing the government to distribute rewards and punishments more effectively, those related to access to education, health, and transportation, etc. Reference [28], however, prefers to demonstrate that the Sesame Credit represents a revolution in trust in Chinese society, since commercial and financial transactions are based on reputation. Chorzempa, Triolo, and Sacks [16], remark that with the Sesame Credit can make commercial transactions safer, as people involved in illegal actions are reported publicly.

A more unfavorable perspective is found with researchers such as [3] who emphasizes the vigilance aspect of the Sesame Credit. To the author, the initiative is based on predictive models, resembling the “pre-crime” department, from the movie Minority Report (2002), which enables the State to arrest citizens before a crime actually occurs. Reference [29] comment on the risk associated with Sesame Credit in what concerns the social exclusion of those people who may eventually have their scores lowered.

III. METHODOLOGY

The present paper consists of a research of a qualitative nature since it is based on observation, analysis and interpretation of an object in its context as a means to describe and understand [30]. The following procedures are being used:

- Bibliographical research** which, according to [31], “is developed based on material which has already been elaborated, comprised mainly of books and scientific articles”. The bibliographical research was made on Scoups, Science Direct, Web of Science and Google Scholar, on April 19th, 2019, using the coin “sesame credit”. Only articles which had peer review were selected;
- An online **documental search**, seeking Chinese government documents as well as media articles related to the subject matter being studied. According to [32], a documental search differs from a bibliographical one due to the nature of the sources: non-academic documents, prior or contemporaneous, non-fraudulent. The author proceeds to determine how documental research has used a means to describe/compare social facts, establishing its inclination or characteristics” [33].

Just as the collected data aimed at accomplishing a study case about the Sesame Credit. The study is characterized by an analysis of multiple sources, with the purpose of “organize and unify data, as abundant and detailed as possible, concerning the

object of study in such fashion as to preserve its individual characteristics” (Pereira, Godoy & Terçariol, 2009, p. 212)[34]. This study relied on an interpretation enabled by two theoretical milestones chosen by the author and unveiled in the Theoretical Framework of the present paper: a) the Octalysis model of gamified mechanics conception; e b) The Self-Determination Theory.

IV. SESAME CREDIT ANALYSIS

The result of the research are as follows: the analysis and interpretation of the Sesame Credit through collected data about the object of the study in lights of the conceptual models exposed in the Theoretical Framework.

A. Motivational bands in Sesame Credit

Fig. 5 summarizes the analysis stemmed from the application of the SDT as Sesame Credit’s interpretative and analytical instrument.

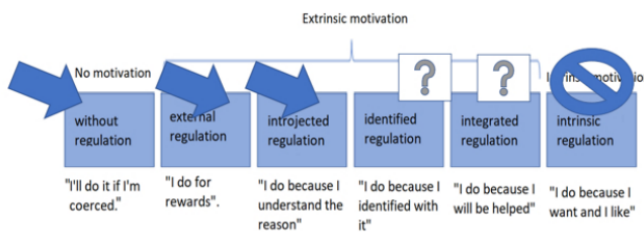


Fig. 5 Description of the Sesame Credit according to the SDT. Source: the author.

Three aspects of Fig. 5 can be highlighted:

- Band 1 coercive treatment** - Sesame Credit presents punitive rules (see Image 4) and it is to become mandatory in 2020 [1]. These two facts indicate users of this “non-regulated” band would exist. That is to say, users who would participate in Sesame Credit under coercion;
- Band 2 and 3 predominance** - Sesame Credit seems to operate in bands 2 and 3: “external regulation” and “internal regulation”. In other words, the majority of those falling into the band 2 and 3 categories need constant monitoring [3] in order to act in such a manner that is desired by the government or only internalizes the Sesame Credit rules, alternatively following the rules for unreflected habits. P.S: The majority of the regulations of the Sesame Credit are in Bands 1, 2 and 3, indicated in Image 5 by dark color arrows;
- Issues with bands 4 and 5** - The Sesame Credit did not find in academic papers or documents, a sense of support from the Chinese population regardless of the obtained material rewards. In other words, voluntary cooperation motivated by the subsequent purpose of the project, which according to the Chinese government is the country’s prosperity;
- Issues with band 6** - Despite the intrinsic motivation elements in the Chinese government’s rhetoric, typical of band 6, such as the feeling of belonging and China’s

sense of amelioration, the publications did not suggest an intrinsic motivation from the users. Furthermore: research on Sesame Credit seems to imply the predominance of the extrinsic motivation to obtain financial and commercial leverage [29].

B. The Sesame Credit Octalysis

As follows, the application of the Octalysis methodology as Sesame Credit’s interpretative and analytical instrument. Fig. 6 summarizes such analysis:



Fig. 6 Sesame Credit analysis through the Octalysis methodology. Source: the author.

In Fig. 6 the Octalysis centers had an elongation directly proportional to the use it seems to have in Sesame Credit. Therefore, it is highlighted:

- Stronger centers** - The Sesame Credit works basically in the Achievement centers: obtaining rewards for earned credit points is the essence of the system, aiming at material advantages [29], but also the social climbing [20]; Social Influence: Act accordingly to government and society expectations, and also connect only to those people with high scores [27]; Scarcity: compete for awards in a competitive system, likewise the reward, “receive priority service” [25]; and Avoidance: behave well in order to avoid the punishments indicated in Image 4);
- Medium strength centers** - The Sesame Credit uses moderately the Ownership center (the user earns status, advantages, and rewards, but can also lose them as well as its rights, like using the transportation system) and Empowerment (can obtain temporary advantages, such as priority customer service, which can also be revoked);
- Weaker centers** - The Sesame Credit does not offer the user tangible rewards in the Meaning center (sense of purpose, and intrinsic motivation, instead of that, it explores extrinsic motivators: money and assets), and Unpredictability (according to the Chinese government, in permanent and explicit regulations, and therefore, with predictable results);

- d) **White Hat & Black Hat** - It is noticeable for being the most developed center, the Achievement is part of the White Hat, while two others are part of the Black Hat: Scarcity and Avoidance. The predominant incentive tactics in the Black Hat area, as Chou [10] explains, promotes abundant feelings of stress and stress relief as a motivational regulation. In other words, the Sesame Credit seems to emphasize tough competition through score earning. Nevertheless, such tense competition can be, according to [1], and [19], dimmed because of the rewards and leverage promises;
- e) **Left-hand side & Right-hand side** - Predominantly part of rational incentives, expressed in financial weigh figures. However, o the Right-hand side has a greatly developed center: The Social Influence one, the incentives to follow rules and regulations and adjusting to the social standard.

V. FINAL CONSIDERATIONS

The Sesame Credit is the world's largest gamification case, and it only tends to increase. Its value as a techno-scientific experiment is invaluable, nonetheless, it evokes debate as well as raise concerns. Especially in what concerns Ethics and Politics, once it involves unilateral characteristics of social control, inescapable and with a considerable number of coercive aspects.

Despite the technical issues in the employed gamification, (such as incentives scarcity for intrinsic motivation and the predominance of Black Hat tactics), Sesame Credit tends to work because: 1) the singularities of the Chinese people concerning obedience and compliance to the authorities [16]; 2) of China's state of the art technological setting, which allows continual population monitoring [3]; and 3) the promise of material prosperity and social mobility promoted through this system [1]. However, it is possible to count with the possibility of the medium as well as the long term, the Chinese population who feels exploited, reject, or even sabotage the Sesame Credit coercive regulations [11].

The present article had its goals accomplished since a well-founded analysis of Sesame Credit has been used through the use of publications containing the subject at hand. In a self-critical methodological analysis, comprising procedures of bibliographical and documental researches are not enough to fully, and deeply understand the Sesame Credit. Such procedure was merely chosen due to the impossibility of collecting data, as well as tests straight from the Chinese population.

As suggestion for futures studies, there are: 1) a research of the horizontal observations of Sesame Credit after 2020, when it is to become mandatory to all Chinese citizens; 2) debate and establishment of ethical gamification protocols, as well as in other projects of behavioral modification in social scale.

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